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ON SYPHILIS.

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LECTURES

ON

No 4

SYPHILITIC AND VACCINO-SYPHILITIC
INOCULATIONS:

THEIR

PREVENTION, DIAGNOSIS, AND TREATMENT.

Illustrated by Coloured Plates.

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LECTURER ON SURGICAL PATHOLOGY AT ST. GEORGE'S HOSPITAL:

SENIOR SURGEON TO THE LOCK HOSPITAL AND ASYLUM:

ETC.

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PREFACE.

THE first edition of these Lectures was published in 1854. The distinctions between the different *modes of origin* of different syphilitic affections (as described in the introduction to the present volume) were then, for the first time, pointed out. These distinctions have lately attracted a large share of public attention, and are becoming generally recognized both by English and continental writers. The adhesive action which precedes the infection of a patient's constitution, and the suppurative action which accompanies the local variety of syphilis, have been acknowledged both in France and Germany. The papular origin of infecting syphilis, and the pustular origin of the non-infecting form of the disease, have especially been dwelt upon in M. Rollet's admirable work on *Syphilis*, recently published.

The present edition includes the substance of several papers which have appeared in the *Transactions of*

the Medical and Chirurgical Society; and to the Council of that society the author is indebted for permission to republish some of the accompanying plates.

The subject of the transmission of syphilis by vaccination has recently only attracted much attention, and the lectures upon this point do not differ materially from those which have already appeared in the *Lancet*.

9, *Savile Row*,

October, 1862.

INTRODUCTION.

WHEN syphilitic matter is applied to the surface of the human body, no appreciable effect in general results ; but when the poison comes in contact with the thin skin in those situations where it joins the mucous membrane, or when applied to the mucous membrane itself, or to the skin in places where the epithelium has been removed, then inoculation may take place. As observed in practice, the results of inoculation afford considerable variety ; when artificially performed, they are much more uniform.

Four distinct and well-marked morbid processes may follow syphilitic inoculation :—

1st. The inoculated part may become affected with the “adhesive form of inflammation,” in which lymph is poured out either in the substance or on the surface of the part.

2nd. The absorbents may assume an active share in the morbid process, taking up some of the infected parts, and with them portions of the syphilitic poison.

This process will, in the following pages, be called "lymphatic absorption."

3rd. The inoculated part may, within a few days of the application of the poison, be affected with suppurative inflammation; and

4th. The morbid action may terminate in mortification. Of this there are two practical subdivisions:—

(a) Death of the whole infected part, which is then thrown off as a slough; and

(b) Dissolution and death of a part only of the contaminated structure, leaving a part still infected.

These four kinds of morbid processes, essentially distinct when once developed, usually maintain their original character until the termination of the disease. Thus the specific adhesive inflammation may be recognized by its characteristic induration, often long after the sore (which usually accompanies it) has permanently healed. But it will, nevertheless, occasionally happen that the action will become changed, and this altered condition (if careful attention be not paid to it) will lead to an error in the diagnosis. A sore affected with adhesive inflammation, upon the application of some fresh irritant, may become a suppurating sore. The superinduced action may perhaps modify, but will not prevent, the specific results of the original disease; or again, a sore that has presented for a time the characters of the suppurative inflammation, will

alter its appearance and assume those of the adhesive form. In such a case, the first disease will not prevent the constitutional effects of the second.

Both these forms of action will constantly be accompanied by "lymphatic absorption"; and the disease in the lymphatic glands will be of the same nature as that from whence the absorbed product was derived. It will also sometimes happen that the specific adhesive inflammation may terminate in mortification, or that a part superficially mortified may become affected with specific adhesive inflammation. In either case, the mortification may be superficial or extend to the whole of the infected tissues; but if the specific adhesive inflammation has once taken place, its effects upon the constitution will subsequently appear.

The above four kinds of diseased action, resulting directly from the application of the syphilitic poison to the surface of the body, may be clearly traced both after artificial inoculation, and by attentively observing the natural course of the disease in different instances. It must always be borne in mind that the character of a sore at one time is no certain indication of what it may previously have been, or of what it may ultimately become. In the mode in which the disease is usually communicated, a part may be subjected to influences which would have a tendency to produce more than one morbid action. Such influences may

be applied either at the same or at different times. When applied at the same time, a twofold inoculation may occur on the same spot; and if the consequent respective actions require different times for their development, one disease may first run its course, and be subsequently followed by the other, which will then go through its different stages, modified perhaps, but not altered, in its essential characters, by the first.

LECTURE I.

 THE SUPPURATING SYPHILITIC SORE.

THE various authors who have written during the present century on the subject of syphilis may be divided into three classes, according to the doctrines which they have respectively advocated. The first of these regard all the various syphilitic affections (including gonorrhœa) as depending upon the same poison. The second distinguish between syphilis and gonorrhœa, and ascribe them to the action of poisons essentially different in their nature. The third allow the difference between gonorrhœa and syphilis, but draw an equally marked distinction between the syphilis which infects a patient's constitution and that which does not. Many authors of the third class regard each of these diseases as dependent upon a separate poison, and, therefore, acknowledge three poisons as habitually producing contagious diseases of the generative organs.

The number of poisons which may produce morbid actions in a part scarcely admits of demonstration. Two different poisons may sometimes produce the same action. Thus, the secretion produced by the puncture

of a foul lancet, and that arising from an injury to a portion of cancellous structure of bone, may both give rise to crysipelas; or, on the other hand, the same poison may, under different circumstances, give rise to more than one kind of morbid action.

It does not, then, follow that because we can distinctly trace so many morbid processes, that there are the like number of morbid poisons. The diseased actions we can trace with great precision, and can predict the circumstances under which they will occur, and define distinctly the laws by which they are regulated and controlled. It is, therefore, more in accordance with strict inductive science, simply to describe the different *modes of action* which occur after impure contact, than to ascribe each different action to a different poison.

In this and the following lectures, therefore, we shall treat principally of the morbid processes to which the contact of syphilitic matter gives rise, the circumstances under which these diseased actions develop themselves, and the results which they respectively produce.

Hunter believed that gonorrhœa was always produced from the same virus as syphilis, and nearly all the practitioners who followed him were of the same opinion. Swediaur, however, remarks that the happiness and tranquillity of many families, not less than the fatal effects arising from the improper treatment of this disease, seem to demand the most careful researches upon the subject. He had convinced himself, from well-authenticated experiments, and numerous

cases attended with the greatest care, that those who maintained that gonorrhœa and syphilis were always the effect of the same poison, and those who held an opposite opinion, were both wrong in generalizing too much, and in speaking so positively, and so lightly on a point of so much importance to the physician and the patient. He had, as he believed, proved to demonstration that blenorrhagia of the genitals of the two sexes owed its origin sometimes to the venereal or syphilitic virus properly so called, and sometimes to some other acrimony applied to the urethra or the vagina. Several cases are related which go to prove that a discharge may be syphilitic or produced by the syphilitic virus; and, on the other hand, cases are given to show that blenorrhagia is generally very different in its origin and nature from the disease produced by the syphilitic virus. It will easily be conceived, he remarks, of what importance this distinction is in practice, when, on the one hand, we see practitioners treat all gonorrhœas as venereal (syphilitic) with mercurials; and, on the other, by an ill-founded theory suffering the syphilitic virus to be communicated, and the disorder propagated through whole families, without giving themselves any trouble as to the unfortunate results. This, in a few words, gives perhaps the best account of the theories of the nature and treatment of syphilis extant in 1821.

In 1838, Ricord's *Traité Pratique sur les Maladies Vénériennes* appeared, and this must always remain a most important epoch in the history of syphilis. Ricord professed to demonstrate the truth of his views

by experiment, and offered his experimental illustrations to all who might wish to witness them. With triumphant success, and to the satisfaction of his admiring pupils, Ricord demonstrated daily the great fact, that when pus was taken from the urethra in a case of gonorrhœa, and inoculated upon the patient, no result followed; whereas when pus was taken from a suppurating sore, and inoculated with the point of the lancet, a suppurating chancre was always produced. A great triumph had here been achieved. Science had vindicated her right, not only to distinguish between different morbid processes, originating apparently in the same way, but also to reproduce these actions, and experimentally to trace them through their various stages. With the light thus derived from experiment, the following conclusions were arrived at by M. Ricord :—

I. A chancre is known for certain, neither because it has appeared after a suspicious contact, nor on account of its situation, nor because it has an indurated base, nor on account of its colour, its shape, the character of its edges, nor by the red areola by which it is surrounded, but by its being inoculable so as to reproduce exactly the same disease again upon the same patient an indefinite number of times. All the other conditions may vary; this alone always remains the same, and affords the same experimental results.

II. The pus of a chancre can alone produce a chancre.

III. The best way to produce a chancre is to inoculate some of the secretion from its surface upon another part of the same patient's body.

iv. Beyond the contact of the pus introduced beneath the cuticle, no other action is necessary to produce a well-developed chancre.

v. The inoculation never fails when the pus is taken under the necessary circumstances, and is properly applied.

vi. The pus taken from an inoculated pustule will reproduce a chancre of the same kind originating in the same way, and thus the propagation may extend from pustule to pustule without limit.

vii. When several inoculations are made from the same suppurating chancre, each one gives rise to a separate pustule, which subsequently becomes a chancre. If three punctures are made, we do not see one succeed and another fail. The number accurately corresponds with, and is never more nor less than, the number of the inoculations properly made.

viii. The pustule, and the chancre which succeeds it, are always developed upon the precise spot where the inoculation is made, and never upon any other part.

ix. Whatever different forms the suppurating chancre may ultimately assume, its course, in its origin, is always the same. The appearance of the pustule is absent only when the part has been excoriated; and it is preceded by phlegmonous inflammation only when the poisonous matter has been introduced into the subcutaneous areolar tissue, or has found its way into the lymphatic vessels.

x. There is no period of "incubation," in the sense in which this word is generally understood. There is

for the suppurating sore but one process of development, from the contact of the contagious pus to the formation of an ulceration.

XI. This chancre is in its origin a local disease.

XII. The constitutional effects which may follow this chancre do not happen in all cases ; and when they do occur it is only after the lapse of a certain time. [It has now been fully proved that constitutional or secondary symptoms do *not* follow this kind of chancre].

XIII. The origin of the affection must date from the period of contact, and not from the time that the patient perceived the disease.

XIV. In making an abstract of a large number of observations, it will become apparent that ulcerations completely destroyed within three, four, or five days after contagion are not followed by any secondary inflammation.

XV. It is only towards the end of the fifth day that the induration of the chancre commences. [This induration, as we shall hereafter see, belongs to another kind of chancre, and is the result of a different morbid process. It has no relation to the disease now described.]

Such are the results of M. Ricord's investigations published in 1838, and they furnish a very faithful abstract of the evidence which he had obtained by his experimental mode of investigation. Every conclusion is based upon direct observation ; and if there had been one form of syphilitic disease, and one only, M. Ricord's conclusions must have stood the test of subse-

quent experience. But it has now been proved by numberless observations, and by more direct experiments than may, perhaps, be justified, that the syphilitic action which arises after contagion is not always the same. The specific pustule, it is true, when inoculated, will always produce the specific pustule; but there is another form of disease, of far more importance to the patient, which does not begin with a pustule at all; which cannot, as a rule, be reinoculated upon the patient who has it; which often has a prolonged period of incubation; which cannot be destroyed by caustic, and which is followed very certainly by secondary symptoms.

Some of the characteristics of the morbid action last referred to have, unfortunately (as in Propositions XII and XV above enumerated), been confounded with those which constitute the local suppurating form of the disease. It will now be my endeavour to distinguish accurately the symptoms which belong to the one and to the other of these two essentially different morbid processes, and to describe each, as it is in truth, as a separate affection.

M. Ricord's description, then, applies in general very accurately to the suppurating form of the disease; but it does not apply to that which, in its origin, does not begin with a pustule, but which begins with some adhesive form of inflammation—such as a papule, a tubercle, or an abrasion, with a thickened base.

The remarks in the remainder of this lecture will apply to the local suppurating form of the disease which gives rise to the soft chancre. In another lec-

ture we shall consider the disease which gives rise to the hard chancre, and its consequent constitutional, or secondary symptoms; and the results of *two-fold* inoculation as they present themselves in nature, under different forms, will subsequently be described, together with the various complications which may thence arise.

The *primary suppurating syphilitic sore* is a local disease, and has never been known, so far as I am aware from personal observation, to infect a patient's constitution so as to produce secondary symptoms. It commences as a pustule, and runs a definite course. When artificially inoculated, the inoculated point becomes red within the first twenty-four hours. From the second to the third day it becomes slightly raised, and is surrounded by a red areola. Between the third and the fourth day it contains a fluid more or less turbid. From the fourth to the fifth day the pustule becomes fully formed, and from this time to the termination of the disease the secretion consists of well-formed pus. Sooner or later, the cuticle covering the pustule is detached, and in some instances it may be removed at the time of the inoculation, whether artificial or natural. This alters the appearance of the affection, but in nowise interferes with its essential characters. As soon as suppuration commences, there is a loss of substance in the part, and an ulcer forms, which has peculiar characters. When not interfered with by any accidental causes, it increases equally in every direction, so as to form a more or less perfect circle. The edges of the ulcer are cleanly cut, and present a sharp outline. The appearance presented is

often that of a piece of skin having been removed by a punch. The edges of the ulcer are frequently slightly undermined and everted. The surface of the ulcer is irregular, sometimes presenting granulations, at other times presenting the appearance of having been worm-eaten. Often the bottom of the ulcer is covered by an adherent, greyish, tough matter, which probably is a part of the natural texture which has undergone a kind of molecular necrosis, and is in process of being separated from the subjacent living parts.

Suppuration in itself does not necessarily involve a loss of substance, but these suppurating sores nevertheless generally leave permanent and depressed scars. This evidence of loss of substance is probably in exact proportion to the degree in which the form of molecular necrosis above alluded to has been present in any individual case. The suppurating syphilitic sore gradually increases during a certain period, then remains stationary, and finally heals. This latter process is indicated by the base of the sore becoming clean and covered by red granulations, by the red areola which surrounded it becoming fainter, and by the edges of the wound gradually losing their prominence.

Such is a description of the typical form of a suppurating chancre; but this may be modified by various accidental causes, of which the following are some of the most important:—

1. If the specific pustule be destroyed by the application of caustic within the first five days of its existence, a simple ulcer alone will remain. This will then have none of the characters of the specific disease.

2. When a chancre during its progress meets with tissues of different natures, or when folds of the same texture are involved, its shape and appearance may be thereby modified.

3. Should the specific inflammation extend to the areolar tissue, a certain amount of inflammatory exudation will there take place. This will produce an induration at the base of the chancre, which will sometimes very much resemble the induration which ordinarily accompanies the infecting chancre, and which will be particularly described in a future lecture. The induration which surrounds the suppurating form of the disease in general, gradually fades towards the circumference to the consistency of the surrounding parts. When this inflammatory exudation, however, in its progress, meets with a different kind of tissue, it may terminate quite abruptly, and then it may be impossible to distinguish by the touch alone, this kind of induration from that of a chancre which infects a patient's constitution. The character of the secretion of the sore, or its inoculability on the same patient, or the history of the case, must then be relied upon to distinguish the disease.

CASE.—A patient, who considered himself well informed upon the subject of the characters of an infecting sore, presented himself in March, 1859. He had a sore on the right side of the frænum, which spread ultimately for about three-quarters of an inch along the urethra. As the sore extended, it became surrounded by considerable induration, and this, as it approached the urethra, terminated quite abruptly.

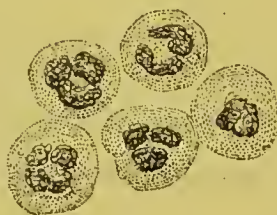
It was then impossible to distinguish this induration from that which accompanies an indurated infecting sore, and the patient believed that his affection presented all the characters of a true Hunterian chancre. The history of the case and the character of the secretion furnished, however, different testimony ; and the patient was prevailed upon, not without very considerable difficulty, to be treated for a local disease. I ventured to assure him that his constitution would not be affected ; and I had the satisfaction of seeing him on the 5th of November, 1860, and again on the 21st of February, 1862, without his having been subjected to any constitutional treatment, and without his having had any constitutional symptoms.

The primary suppurating syphilitic sore which is accompanied by the induration above referred to, has been named the *phlegmonoid* variety. (See Plate I.)

4. The most remarkable accidental circumstance which modifies the course of a suppurating chancre is the absorption by the lymphatic vessels of a portion of the affected tissues, or of the secretion which they have produced.

Lymphatic absorption of the product of a suppurating syphilitic sore affords the same evidence of the nature of that sore as does artificial inoculation. The secretion transferred to another part is followed by the same effect, whether artificially conveyed by the point of a lancet, or by the natural process of lymphatic absorption. In either case, where the seed takes root, there will it germinate and produce its natural consequence. The morbid process which ensues terminates

surely, and without any period of ineubation (in the ordinary acceptation of the term), in the formation of a small quantity of matter which always has peculiar properties. This matter is *pus*, and pus which has the property of always reproducing its specific action when again applied to another part of the same body, or when inoculated upon another person. This pus is therefore called *specific*. To the naked eye and to the microscope it presents all the characters of ordinary pus; but it has, in addition, its specific qualities, which are known only by their effects. Even to the naked eye and to the microscope this secretion of the suppurative form of syphilis has characters which distinguish it from the secretion of the indurated sore, or of the infecting form of syphilis. It consists of well-formed pus; and each globule is of nearly the same size, and distinct from the rest. If, in any doubtful case, some of the secretion from a sore be mixed with a little dilute acetic acid and placed under the microscope, the distinctive characters of the pus-nuclei will be seen, as represented in the accompany-



Microscopic appearance of secretion from a suppurating syphilitic sore treated with dilute acetic acid, X 700.

ing woodcut. The appearances produced are quite distinct from those which are afforded by the secretion

from an infecting sore treated in the same manner, as will be more fully shown in another lecture.

When this specific pus has produced its natural effect either in a lymphatic vessel or in a lymphatic gland, the fresh portion of pus thus generated produces a fresh specific irritation, and this irritation produces an abscess, which, breaking externally, discharges its contents. In such a case the matter in the interior of the gland, or lymphatic vessel, constantly retains its specific characters ; but that which during the process of suppuration is formed outside the vessel or gland is ordinary non-specific pus. As the disease advances, these two secretions may be mixed together, and then the whole acquires the characters of the specific fluid, and the surface of the whole sore will become inoculated.

Lymphatic absorption from a suppurating syphilitic sore then necessarily produces a suppurating bubo. Any attempt to prevent such an affection from suppurating is entirely futile. The disease within the lymphatic system is the same, and runs a similar course as that upon the surface of the body.

The disease now described is not beneficially influenced by mercurial treatment ; and inasmuch as it has no tendency when left to itself to infect a patient's constitution, any mercurial treatment in order to prevent such an infection is entirely superfluous. The suppurating syphilitic sore will sometimes be tedious in healing, and a variety of applications may be tried sometimes without producing any apparent effect upon the course of the disease. In a case lately under my

own care at St. George's Hospital, a sore of this nature lasted four months, apparently little influenced by treatment; but the patient at the end of that time made a very good recovery, and now remains well without having taken any mercury.

The suppurating syphilitic sore has been often repeatedly inoculated for the supposed purpose of producing what has been termed *syphilization*. But inasmuch as the disease, however often repeated, remains a local one still, no constitutional or permanent effect can be produced in this way; still less can any condition of the system be produced which would render it insusceptible to the infecting form of the disease. It must, however, be admitted that when a patient has already constitutional syphilis, the symptoms which have developed themselves will often disappear under this so-called syphilization. It is principally efficacious in diseases of the skin, and these are probably removed, under the circumstances, in consequence of a kind of counter-irritation produced by the repeated inoculation of the syphilitic matter, and suppuration of the inoculated points.

One very important and interesting fact will require especial notice with regard to the so-called syphilization—viz., that after repeated inoculations have been made on a part, that part becomes less and less susceptible to the influence of the poison (see Plate 1), and a time arrives at which the inoculations will cease to secrete pus, and then they will no longer be inoculable. If fresh matter, however, be used, the inoculations will again succeed; but these will gradually lose

their effect, as at first. This process may be repeated until a part is no longer susceptible to any inoculation from the secretion of a suppurating syphilitic sore. But then a fresh part may be inoculated, and the same process repeated. Under this mode of treatment it is said that a time ultimately arrives at which no further inoculation can be effected from a suppurating sore upon any part of the body. Even then, however, after the lapse of a certain interval, the suppurating syphilitic sore may again be communicated, but always without imparting any constitutional or syphilitic taint to the patient. This subject will be considered more at length in a future lecture.

LECTURE II.

 SYPHILITIC INFECTION.

SYPHILITIC infection of a patient's system, as far as it can be traced by local symptoms, commences as a crack, an abrasion, or a pimple. These affections, in the *origin*, are often extremely difficult to recognize. They frequently do not present any characters by which they can be distinguished from similar results arising from a variety of accidental causes, and they may be masked by the coexistence of other local venereal complaints.

Syphilitic infection at its first appearance generally attracts but little attention. It is attended with no inconvenience, and the patient is willing to believe that it is "nothing"—an opinion which has been but too often endorsed by the surgeon. As the disease declares itself, it assumes one of three forms, which are all modifications of the adhesive kind of action:—

1. The cuticle may appear as if peeled off from the upper part of the glans penis, or a circumscribed patch may remain for days together, presenting a livid or purple colour. The structures below are not infiltrated, and therefore there is no specific induration.

The secretion, consisting of epithelial scales and lymph-globules of various sizes, and more or less perfectly formed, is thrown off from the surface. In women there is probably a corresponding affection of some parts of the mucous membrane, not accompanied by induration ; but on account of the difficulties attending the investigation of these complaints in their origin in females, such a condition has not hitherto been described.

II. An indurated tubercle, without ulceration, may form in the skin or under the mucous membrane, and will then present all the characters of the specific induration without any loss of substance. (See Plate III.)

III. The most ordinary form of syphilitic infection is that which has been called the indurated or Hunterian chancre. In this a deposit of lymph occurs in the areolar texture of the skin or of the mucous membrane, and is succeeded by a process of molecular necrosis, by means of which the newly deposited matter is in part thrown off, and an ulcer is formed ; but, inasmuch as it is the newly deposited material which alone perishes, no depressed scar, or permanent loss of the natural tissue occurs. The secretion from an infecting chancre, when the disease is not accompanied with irritation from any accidental cause, is not pus ; it consists of epithelial *débris*, of globules of lymph more or less perfectly formed, or of these same products undergoing disintegration, and of serum more or less turbid. During the time that the adhesive matter is being thrown off from the surface, or whenever a part has been irritated by an adherent scab, or

by the application of lotions, some suppuration may take place; but as soon as the accidental cause of irritation has been removed, the natural non-puriform secretion alone remains. If in any doubtful case a portion of the secretion be placed upon a piece of glass, and a drop of dilute acetic acid be added, the microscopic appearances will be found to be very different from those which were described in the last lecture as characteristic of the secretion from a naturally suppurating sore. The accompanying woodcut represents the appearances of some of the secretion



Microscopic appearances of some of the secretion of an infecting sore, treated with dilute acetic acid, and examined, $\times 700$.

from an ordinary infecting sore, examined in the manner above described. In this case the sore, which was in a state of progress, had been dressed with water dressing, in order to prevent any accidental cause of irritation, for two or three days previous to the examination.

These three forms of infection are all modifications of the adhesive form of inflammation; and there is much reason to believe that the first two have not been recognized by a large majority of the writers on syphilis, and that hence a number of cases have been

erroneously recorded, in which constitutional syphilis was supposed to have been acquired, without any primary affection.

The induration which accompanies the second and third form of the specific adhesive inflammation is peculiar, and, when well marked, it furnishes a diagnostic test of the nature of the complaint. It surrounds the edges and base of the chancre in every direction to nearly an equal extent. It terminates quite abruptly in the surrounding tissue ; so that it not unfrequently affords the sensation as if a foreign substance, such as a piece of cartilage or half of a pea, had been introduced into the substance of the skin. This induration depends upon the effusion of lymph into the areolar texture of the skin, or of the mucous membrane ; and when it is considerable, the part is raised above the surrounding surface, and then gives rise to the variety of ulcer which has been called the *ulcus elevatum*.

This induration has, no doubt, often been confounded with the infiltration, which surrounds the phlegmonoid variety of the suppurating sore, and with that produced by accidental irritation ; but in the great majority of cases it may be distinguished by its abrupt termination, and by its equal consistency throughout. Another form of disease, from which it is not so easily distinguished, is the secondary induration, which may form part of the constitutional symptoms of syphilis. This secondary induration may show itself in the same parts as primary infecting sores, and may, like them, be accompanied by induration. In both cases the in-

duration depends upon plastic effusion from a specific cause ; in both this has a tendency to assume, more or less, the tubercular form ; and in both the induration may terminate abruptly. In general, however, this defined outline is more marked in the primary than in the secondary form of the disease.

Syphilitic infection does not manifest itself immediately upon the application of the poison ; a period of incubation follows the inoculation, during which nothing is perceived, and the patient thinks himself well. From three to seven weeks after the application of the cause the primary disease will manifest itself. In the interval there may possibly be some other venereal affections, such as arise from the contact of impure secretions, but the characteristic symptoms of the syphilitic infection will not appear until after the period of incubation above named. There is, however, one remarkable exception to this rule, and that is with regard to the re-inoculation of the secretion of an infecting sore soon after its first appearance. At that time the inoculation will succeed much more quickly, and the induration which follows will be sooner developed. It has been said that if a person be inoculated with the vaccine matter on several successive days, the vesicles will all arrive at maturity about the same time. Now, something like this obtains with regard to syphilitic infection. If a person becomes infected, and a sore appears some three or four weeks afterwards, and some of the secretion from that sore be re-inoculated, the inoculation will probably succeed, and the induration of the two sores will then appear about the same time.

After the characteristic induration has been established, the infecting chancre is no longer capable of being re-inoculated ; but for a considerable time, if fresh action be excited in the part, as, for instance, by the application of a blister, a secretion may be obtained which is reinoculable upon the patient himself. The inoculations thus produced do not resemble in their course the results of inoculations on a patient who has not previously been infected. They have no period of incubation. They are not accompanied by induration. They rarely ulcerate ; and if a sore forms, it soon heals. The stains, however, of these inoculations from an irritated infecting sore may last for weeks or for months. (See Plate II.)

Some very remarkable statistics have been produced on the subject of the reinoculation of the secretion from infecting sores. In 1855, M. Clerc announced the doctrine, that this secretion could not be inoculated—a theory which corresponded with, and might have been deduced from, Ricord's dogma, that a person can have syphilis once only. As the indurated sore was allowed to be the necessary precursor of constitutional syphilis, and as syphilis was supposed always to follow an indurated sore, it followed that, when once the constitutional affection was established, the patient's system in which it was so established would no longer be capable of being reinoculated so as to produce again the same disease. In 1856, this point was experimentally tested in the Lock Hospital, and the results are recorded in the *British and Foreign Medico-Chirurgical Review* for the same year. It was

then found that the indurated chancre was not capable of being inoculated upon a patient whose system was already syphilized in the proper acceptation of the term.

In 1856, M. Fournier also inoculated a hundred patients from their own infecting sores, and succeeded in his experiments once or twice only. His results were not published until 1858.

M. Rollet, in his recent work, mentions having inoculated two hundred patients who had infecting sores with the secretion of their own chancres. He found that those in whom the inoculation succeeded were six per cent. These sores were said to be *auto-inoculable*. In the remainder the inoculation failed.

Now, Fournier's experiments and Rollet's experiments coincide in a wonderful manner with practical statistical details as carefully observed. During the years 1855-56, I kept an accurate register* of such cases, and out of one hundred that had been diagnosed as suppurating non-infecting sores, secondary symptoms followed, as far as I was able to ascertain, in two instances only. Out of so large a number, the proportion is curiously in accordance with the exceptions in Fournier's and in Rollet's experiments. The exceptions in all three series of observations may be attributed to the same cause—a *twofold* inoculation had in all the instances taken place, and produced the suppurating local syphilitic affection as well as the in-

* Cases regarded as doubtful or mixed were not included in this table.

fecting chancre. The former had in Fournier's and in Rollet's exceptional cases furnished the inoculable pus, and had, in my own observations, masked the characters of the affection that I was attempting to diagnose. This conclusion is confirmed by the results of the inoculations as far as the experiments were concerned. The affection produced by the inoculation from the supposed indurated sores was, not an indurated sore of the same nature, but a *pustule*, the characteristic origin of the local suppurating disease. Practically, then, we conclude that if a syphilitic sore yields a secretion, capable of being inoculated so as to produce the specific pustule, the evidence, so far as it goes, is in favour of its being a local disease, and not requiring constitutional treatment. If, on the contrary, a disease which we believe to be primary syphilis yields a secretion which is not auto-inoculable, then the evidence is against the local character of the affection, and indicates a constitutional mode of treatment in order to prevent or to mitigate the secondary symptoms.

A few years only have elapsed since the test of a really syphilitic sore, and the propriety of giving mercury for its cure, was supposed to be its auto-inoculability. This doctrine was upheld even in some of our most widely-circulated works on the subject of syphilis. But, as now shown, the idea was not only an unsafe guide scientifically, but it was practically the very reverse of the truth. The confusion which thus arose was one of the many natural results of some of our leading authorities, both here and on the continent,

having confounded together, and mixed up in their descriptions, the two varieties of syphilitic disease. These are now, it is hoped, sufficiently clearly distinguished, never again to be confounded.*

In a well-marked infecting sore, the edges are firmly adherent to the subjacent and surrounding tissues. They are smoothly bevelled off, or rounded so that the well-defined sharp edge noticed in the description of the primary suppurating sore is here wanting. The surface of the infecting sore varies in colour. It sometimes presents a fawn colour; at other times it is uniformly red; at others, again, portions of adhesive matter of a greyish colour will be seen on its surface. These different appearances depend upon the accidental circumstance of the separation, or otherwise, of a portion of the plastic exudation which forms the thickened base of the sore.

Besides the nature of the secretion, and the auto-inoculability of that secretion, there is another diagnostic test of very great value in distinguishing primary syphilitic infection, and that is the condition of the corresponding inguinal glands.

In the previous lecture we saw that some of the

* The distinction between the two kinds of disease in their mode of *origin* was first recognized in 1854. In my *Pathological and Surgical Observations*, published in that year, the local disease, which commences with a suppurative form of inflammation, is described as a distinct and separate morbid process, from the specific adhesive action which is followed by constitutional symptoms. That the auto-inoculability of a chancre was evidence of its non-infecting character, was first pointed out by me in the *British and Foreign Medico-Chirurgical Review* for 1856.

material involved in the local suppurating form of the disease might be conveyed through the lymphatic vessels, and again reproduce its particular morbid action either in the lymphatic vessels themselves, or in the inguinal glands, and we regarded this as a kind of reinoculation, as a translation of the disease by a natural process from one locality to another ; and it has been shown in the first part of the present lecture that during the early stage of a syphilitic infection the part first contaminated produces a secretion which is auto-inoculable. These two circumstances will prepare us for understanding the pathology of the chronic indolent enlargement of the glands which constantly attends a syphilitic infection.

The part first inoculated, as we have seen, takes on the adhesive form of inflammation. If some of the secretion from this infected spot be inoculated with the point of the lancet before the specific adhesive action develops itself, both inoculated points will become similarly affected ; and if by a natural process the same thing be effected—if a portion of the contaminated matter be conveyed along the lymphatic vessels, then at the point where such matter is arrested the specific adhesive action will take place.

Thus both forms of the syphilitic disease are auto-inoculable : the suppurative form during its whole continuance ; the adhesive form during its early stage only, before the specific hardness has appeared. Each form of syphilis is capable, by natural auto-inoculation, (or by lymphatic absorption), of being conveyed to the inguinal glands, and of there reproducing its spe-

cific and peculiar action. It would appear, however, that in the suppurative form of the disease, in which the discharge is soon thrown off from the surface, lymphatic absorption does not so generally take place as in the specific adhesive action, where the infected tissue remains often for months as a portion of the living structure of the part. Consequently, in the suppurating form of the disease lymphatic absorption by no means always occurs. It is the exception, and not the rule, and when it does occur, one gland only is generally affected; whereas in the adhesive form of the disease, the inguinal glands are almost always involved, and in general there are several affected at the same time. This has caused the name of *multiple indolent bubo* to be given to this specific affection of the inguinal glands: a condition very surely indicating that the patient's system will shortly be, if it is not already, infected.

The characters of the inguinal glands affected with specific adhesive inflammation are peculiar. The affection appears at, or about, the same time as the specific induration. This peculiar form of auto-inoculation occurs, therefore, at the same period at which the chancre might be inoculated by the lancet upon another part of the same patient's skin.

After an indurated chancre has ceased to be auto-inoculable upon the skin, it probably ceases to furnish any matter to the absorbents which can cause their specific induration. The suppurating syphilitic sore, on the contrary, which furnishes a secretion which is auto-inoculable during its whole existence, may also at

any period of that existence give rise to a suppurating bubo.

Sometimes one gland only is involved in a case of syphilitic infection ; but generally there are several. Each gland becomes enlarged without causing any pain or inconvenience to the patient, and without his being aware that anything unusual is taking place in the part. The enlargement is confined to the gland structure itself, and does not involve the surrounding cellular tissue. Each tumour may become the size and shape of the dried shell of an almond ; and I have been in the habit of describing this peculiar affection as the *amygdaloid* condition of the inguinal glands. Each separate gland may be felt rolling in its bed of loose cellular tissue, and the unaffected skin will move freely over it. These glands are very hard, and give very much the same sensation to the touch as the induration of a primary chancre. The peculiar hardness depends upon the fact that this newly effused plastic material is confined to the gland, and accurately circumscribed by its capsule.

Lymphatic glands affected with specific induration do not suppurate. When the disease is uncomplicated this may be received as a universal rule. Yet in practice we every now and then hear of buboes suppurating in connexion with infecting sores. Some of these are scrofulous buboes ; some are buboes arising from some accidental cause of irritation ; and some are buboes which occur upon the accession of secondary symptoms, and in consequence of some eruption on

those parts of the skin, whence the lymphatics which empty themselves into the glands, arise.

When all these sources of error in diagnosis have been guarded against, there will still remain a few cases in which an infecting chancre has apparently given rise to a suppurating bubo. The number of such cases has not been ascertained statistically, but they are very few indeed, and probably not even so great in proportion as the cases in which an infecting sore retains its auto-inoculability after the development of its specific induration. The exception in both classes of cases depends, in all probability, upon the same cause,—namely, a twofold inoculation upon the same part.

A very remarkable circumstance remains to be noticed with regard to lymphatic absorption, both from the suppurating sore and from the primary infection. The glands into which the absorbent vessels directly enter are those only which are affected. These are called the glands *first in order*. The glands *second in order*—that is, those glands which receive their lymphatic vessels only from other glands, are never affected with the specific action peculiar to any form of primary syphilitic disease. It is evident, therefore, that no form of syphilitic action can find access to a patient's system through the lymphatics. The specific action ceases with the first system of glands with which the affected matter is brought in contact, and therefore the affection of the lymphatic glands may be looked upon as a part of the primary symptoms. An inguinal gland affected with specific induration would,

no doubt, if no other cause of infection existed, produce constitutional disease ; but it would be by means of the blood that circulates through its diseased structure, and not by the passage of the poison into the circulation through the thoracic duct. In the same way a chancre infects a patient's constitution by the morbid action communicated to the blood circulating through its texture, and not by lymphatic absorption.

When once the general system of a patient is affected with syphilis, the same disposition to the effusion of plastic matter may occur in any situation as was manifested at the original seat of the disease. This disposition to plastic effusion may be traced in every stage of the disease. We have considered it in the primary infection, and as giving rise to the peculiar characteristic induration of the lymphatic glands. In the secondary forms of the disease the same action may also be traced in effusion of lymph upon the iris ; in the deposit of tubercles in the cellular tissue and in various internal organs ; in nodes upon the bones ; and in various kinds of papular and tubercular eruptions upon the skin. All these different forms of secondary disease may be referred to the same tendency to plastic effusion ; the effused material, if allowed to remain, being influenced by, and becoming part of, the structure in which it occurs.

A German writer, Dr. Hermann, has very recently published his views on syphilis ; and he believes all syphilis to be local, and to require no constitutional treatment. He entirely ignores any general syphilitic infection of a patient's system, and consequently con-

siders mercury and iodine as injurious. It is evident that this gentleman's observations, if correctly made, must have been confined to one class of cases only. In a work published not long ago by Mr. Labatt, nearly all the cases observed were, from peculiar circumstances, instances of the local or suppurating form of the disease ; and Dr. Hermann must, from some unexplained cause, have met exclusively with the same class of cases.

In the treatment of syphilitic infection cauterization is of no avail, as far as the prevention of constitutional symptoms is concerned. The period of incubation which has elapsed before the disease manifests itself forbids the idea that the poison can then be destroyed by the application of caustic to any particular part. Practically the same truth is found unfortunately to be but too evident. Infecting sores, that have been destroyed on the very day of their appearance, have subsequently continued to spread, and have produced their natural consequence. Even if an infecting sore be cut out, the infection of the patient's system will not thereby be prevented. The diseased action has already spread to other parts, and has already perhaps commenced in the lymphatic glands before any visible indication of its existence presents itself. A sustained, judicious and constitutional mode of treatment is the only one that can be relied upon in the treatment of this disease.

LECTURE III.

SYPHILIZATION (so CALLED).

BOTH the suppurating and the infecting variety of syphilis, described in the preceding lectures, may be modified by various circumstances, two of which, viz., syphilization and lymphatic absorption, require a separate consideration. It has been shown that the secretion from an infecting sore, when the specific induration has once taken place, can only be inoculated again upon the same individual under exceptional circumstances. The secretion from the suppurating sore, on the other hand, may be reinoculated a great number of times. It has, however, been found that when thus repeatedly inoculated, the first chancre produced lasts longer than the second, and the second longer than the third, and so on. Hence arose the idea, that by a succession of inoculations a point might be arrived at, after which the system would not be susceptible of any fresh syphilitic infection.

In the debates which have taken place upon this subject, much useless controversy has arisen from a want of distinction of the different kinds of syphilitic action. Prolonged and animated discussions have taken place

in some of the first societies of Europe upon the subject, without any previous attempt to define what syphilitic action it was, the effects of which were under contemplation. Much confusion hence arose; and the writings of syphilographers of the period are full of contradictions and inconsistencies.

Thus M. Vidal, one of the ablest writers on syphilis, is of opinion that certain persons are naturally incapable of being inoculated with the syphilitic virus; and that in others this immunity may be acquired under certain circumstances. As an instance of the first kind, he cites the case of a man well known to many of those who had taken part in the discussion on syphilization in the Academy of Paris. This person had never been affected with syphilis, although he had continually exposed himself to contagion. He was, moreover, twice inoculated with pus taken from a chancre during its active stage, with no result whatever.

As a proof that this disposition may be acquired, M. Vidal instances the case of M. Laval, who, after having been repeatedly inoculated on the upper extremities, at length became proof against any further inoculation. "I am perfectly certain," he says, "that M. Laval was inoculated upon three occasions by M. Gosselin (with pus which produced chancres upon another patient), without effect." This same M. Laval, however, was at length successfully inoculated by M. Ricord. This is explained by M. Vidal, upon the supposition that after a certain number of inoculations, the system loses its susceptibility to the effects of the

syphilitic virus for a time, but that after an interval of rest it may again, as before, become subject to the disease.

With this explanation, M. Ricord and his school appear little satisfied. "Give me," says he, "a person who has been syphilized, and who is proof against further infection, who will come before the class at the Hôpital du Midi or before the Académie; who will enter the lists with me, and defy me with the arms of my choice." This challenge was published on the 12th of August; on the 22nd M. Auzias accepts it; on the 23rd of September M. Ricord declares himself ready; on the 4th of November he announces that the experiments have commenced, and that the results will be published in the *Union Médicale*.

"Search the records," cries M. Malgaigne, before the Académie de Médecine; "the promised communication has never arrived." A week afterwards, M. Ricord presents M. Laval to the Chirurgical Society, and on the 18th of November, to the Academy of Medicine. Not a word is said about the above-mentioned experiments. On the 9th of December, M. Maschal writes to the *Gazette des Hôpitaux*, that M. Laval has presented himself to M. Ricord, who had twice made seven inoculations with three different kinds of pus, each of acknowledged efficacy, without producing any result. M. Ricord answers nothing, and the *Union Médicale* is silent.

M. Malgaigne continues: "This silence appears to me very like a defeat. I should, however, have preferred an open and public avowal of the result of the

experiments, and therefore I urged some explanation on the point. Several presented themselves. But what did M. Ricord himself say? That he had produced upon M. Laval an ecthymatous pustule, sufficiently characteristic not to require further proof; and that the other inoculations which had failed had been done with pus, which had also failed to produce its specific effects when inoculated on the patients from whom it was taken."

No further details of these experiments are given. M. Ricord declares that his dignity would be hurt if he gave any further explanation. "That does not satisfy me," says Malgaigne. "What connexion is there between M. Ricord's dignity and the details of an experiment? By his own avowal, upon his own ground, having entered the lists with the 'arms of his choice,' M. Ricord succeeded only once in seven times. But the inoculations failed upon other patients, which proved that the matter was not good! Who would have thought that M. Ricord, after so solemn a challenge, in his immense practice, and with his choice of arms, should not have been able to find some good pus?"

"But at length one inoculation succeeded. Granted; provided that the counter experiment, which M. Ricord himself declares always indispensable, was made, viz., that the pus produced by the inoculation could be again inoculated.

"For my part," concludes M. Malgaigne, "I regard the fact that certain persons may acquire an immunity against syphilitic inoculation as incontestably demon-

strated. If M. Ricord doubts it, I will engage to produce a young man who believes himself syphilized, and who will defy M. Ricord to produce in him a single atom of pus capable of being again inoculated. M. Ricord shall take his precautions. If he does not succeed, he shall begin again; my patient declares himself ready to allow twelve hundred inoculations to be made upon him, and more if these should not be deemed sufficient."

It is farther maintained by Dr. Sperino, M. Auzias-Turenne, and others, that inoculation may not only serve as a means of diagnosis, and of preserving the system from the action of the syphilitic poison, but also that it may be the means of curing the syphilitic disease when the constitution has become infected by it.

This mode of practice is not likely to be seriously entertained in England, and the facts hitherto published, with regard to it, require confirmation. They cannot, however, be overlooked, and have at least this effect, that they tend to disabuse the minds of professional men, and through them of the public, of an idea that has very generally prevailed, namely, that the severity of the constitutional symptoms, and the frequency with which they occur, bear some proportion to the number of primary sores. From Dr. Sperino's book it would appear that in no case were the inoculations which he practised followed by any serious results; a slight surrounding inflammation, or a transient phagedænic ulceration, is the sum of the much dreaded consequences which are said to have followed. If very serious results were likely to happen, Dr. Sperino

ought to have met with such, for he has been by no means sparing in the number of his inoculations. Out of fifty-three cases of primary syphilis, we have fifty-two treated by repeated inoculation or, as it is termed, by syphilization. In these the plan is said to have been successful in fifty, and unsuccessful in two cases. Out of forty-three patients affected with constitutional syphilis, twenty-six were treated by syphilization, and twenty-five were cured. In six instances the iodide of potassium was used in conjunction with syphilization, and in eight cases syphilization, iodide of potassium, and mercury were all employed. In three cases it was found necessary to discontinue the inoculations, and two patients died. Of the fifty-three patients treated for primary syphilis, only three presented themselves subsequently with secondary affections; and in these the disease is said to have been cured by fresh syphilitic inoculations. With reference to the comparative frequency with which secondary affections may be expected after this plan of treatment, we cannot tell how much the popularity, or the inconvenience of the mode of treatment may have influenced its apparent results. Whenever a new plan of treatment has failed, or has been attended with much inconvenience, it is not likely that the patient will again have recourse to it. This remark may apply with peculiar force in the present case, where the plan adopted must necessarily have been met at first with a very general feeling of distrust. But the result with which we are chiefly struck is, that amongst the patients who were said to be cured of constitutional syphilis by syphilization, no

case presented a recurrence of the disease. This, we believe, is a more favourable result than can ever be expected from *any* plan of treatment.

A very important point remains to be considered, namely, what length of time was occupied in the treatment of these cases. Excluding the cases treated with mercury and the cases in which the treatment was interrupted, Dr. Sperino gives us seventy-six cases, in which the supposed immunity against the effects of syphilis, acquired by repeated inoculation, might be observed. Of these, the cure is said to have been effected in less than a month in one case ; in from one to three months in four cases ; in from three to six months in seven ; in from six to nine months in eight ; in from nine to twelve months in eight ; in from twelve to fifteen months in twenty-one ; and in from fifteen to seventeen months in twenty-seven. In this analysis we cannot but observe the relation between the gradually increasing number of cases and the length of time required for their cure ; and we are not surprised to find that no case should have returned after having been treated upon this plan from fifteen to seventeen months.*

We are informed that in this mode of treatment the

* A gentleman of my acquaintance, travelling for amusement in the East, thought he would improve his opportunity and bring to bear the smattering of medicine which he had picked up in England ; and in some places he appears to have gained a considerable reputation among the natives. He had heard that a "good strong" solution of caustic was a remedy for inflammation of the eyes ; and accordingly he adopted this plan of treatment. The result was that he "cured them all ; they never came again" !

ulcers first produced by inoculation cause some suffering, but that subsequently the patient may attend to his usual business, and appear to be in his accustomed health. The cicatrices produced by the inoculations are said to be, in the majority of instances, small and superficial, leaving very little evidence of their existence. Occasionally, however, the ulcerations have become phagedænic or gangrenous, and then the traces of their existence have subsequently been visible enough.

The practice of syphilization is advocated for primary ulcers, which it is said soon lose their characteristic hardness and begin to cicatrize. Buboes, also, are beneficially acted upon by this treatment. Vegetations, on the contrary, are not influenced by the practice ; but cutaneous syphilitic eruptions, secondary syphilitic ulcerations of the skin or mucous membranes, the loss of hair, and the deep subcutaneous ulcerations of the cellular tissue, are all said to be cured by this plan. Syphilitic iritis has also been treated in this way successfully. Periostitis, necrosis, and caries, are likewise supposed to have been brought under its magic spell. But before we can draw any inference from the facts stated, supposing them to be all strictly true, we should require an equal number of similar cases in which no treatment at all was pursued ; and it might be difficult to say in which of the two classes of cases the disease would prove the most severe or would last the longest.

Professor Boeck, of Christiana, has lately used syphilization both in adults and in infants. He only employs this so-called remedy in cases of constitutional syphilis,

and the matter is derived, as he says, either from an indurated or from a soft chancre, and is inoculated in the same way as the vaccine poison. In order to prevent large ulcers and cicatrices, he begins his inoculations on the sides of the trunk. Three inoculations are made on each side. After three days he finds pustules produced, and from these he makes, at that period, fresh inoculations. In this way he continues inoculating every third day, always taking the matter from the last pustules, until it is no longer possible, with this matter, to produce any effect. Matter from a fresh patient is now used, and will produce pustules in the same way as the first ; the pustules and ulcers resulting from this second matter are not nearly so large as those produced by the first inoculations. If a third matter be now taken, it will produce pustules and ulcers, but still smaller and fewer in number, and at last a time arrives when no matter applied to the sides will produce any specific effect. Still, however, Professor Boeck finds that the thighs are susceptible to inoculation either from fresh matter or from matter of the last pustules. The process is now repeated on the thighs, until an immunity is there also obtained.

The conclusions arrived at by Professor Boeck are :

1. That artificial chancres on the sides and on the arms are always smaller than those on the thighs, and the series of inoculations shorter.

2. By continued inoculation the ulcers always become less and less, until at last the inoculations give a perfectly negative result.

3. The inoculated individual grows insusceptible to

one matter, but is still subject to the action of another, yet in a lower degree ; and again to a third one, but in a still lower degree ; and so on until no further effect is produced by any matter.

4. Immunity having been obtained on the sides and on the arms, it will still be possible to have rather a long series of inoculations on the thighs.

All these phenomena, the professor remarks, are constant : they will not be seen in one individual and missed in another ; they will always show themselves. "*We have here an invariable law of nature.*"

Professor Boeck draws the conclusion that the inoculations produce a general effect upon the organism, as shown by the later inoculations always being less efficacious than the first ; and if so, it must be allowed that *an* effect is produced upon the system of the patient ; but that this effect is produced by the absorption of the inoculated syphilitic virus by no means necessarily follows. The absorption of the syphilitic poison is marked by a well-ascertained series of symptoms, which leave no doubt as to its presence. The symptoms which it produces have very rarely (if ever) been known to accompany artificial inoculations such as that above described. What evidence have we, then, of any absorption of syphilitic poison after pustular syphilitic inoculation ? The truth appears to be, that these cases of repeated pustular inoculation very much resemble those of natural syphilitic inoculation in certain classes of patients, already alluded to, and lately brought under the notice of the profession in Mr. Labatt's work. In his observations confined to soldiers,

he saw very few indurated sores, and very few cases of secondary symptoms. The cases of repeated natural and of artificial inoculation appear analogous. In both the ulcers are usually of the soft and suppurative kind; in both a kind of immunity more or less perfect, may (in some cases at least) be acquired; and in both there is an entire absence of what are usually considered constitutional symptoms. What ground have we, then, for saying that absorption of syphilitic matter takes place after artificial inoculation, unless we allow the same to occur after the oft-repeated inoculations to which some of the lower orders of both sexes not unfrequently subject themselves, but which we see produce no constitutional symptoms, and are commonly recognised as non-infecting sores?

The examples of syphilitic disease given in Mr. Labatt's work are, from peculiar circumstances, almost exclusively of this class. The examples of inoculation given by Professor Boeck are in like manner confined to the inoculation which produces the suppurative form of inflammation. A ready acquiescence in the doctrine that syphilitic inoculation is always followed by the same results, whether derived from an infecting or a suppurating sore, has here led to much confusion.

Auzias-Turenne and Sperino also refer the effects observed, after repeated inoculation, to the absorption and saturation of the system with the poison; but they offer no explanation of the seeming contradiction involved in their theory, viz., how it is that, if such saturation really takes place, the symptoms should not become worse instead of better.

Professor Faye and Danielssen attribute the disappearance of syphilitic symptoms, during this process of syphilization, to the depurative action of the sores excited by successive inoculations, and the apparent immunity to the virus to the impaired vitality of the dermis.

An examination of the statements made by Bocck and others, indubitably leads to the inference that the virus used was obtained from the soft non-infecting sore, for Boeck states that the best matter is that derived from a chancre attended by a suppurating bubo; and the phenomena of the artificial disease, excited by inoculation, are characteristic of the soft and not of the hard chancre.

The application of various irritants to the skin—such as repeated blisters, issues or setons—do not yield parallel results to those obtained from the application of the chancre virus, because the local lesions produced by the latter agent will be specific ulcers difficult of eradication, instead of simple injuries constantly tending to heal.

Cullerier has, however, made some attempts in this direction, by the application of a numerous series of blisters to the skin in the treatment of syphilis. The results have been that these gradually lose their effect, and finally fail to excite irritation, while, in some cases, cures have been obtained.

Danielssen used syphilization as a means of treatment in lepers not affected with syphilis; and the experience thus obtained is conclusive, on the one hand, that no absorption of the virus takes place; and,

on the other hand, as to the nature of the virus used. He gives the history of six cases, and with reference to them, says,—

“ It appears from the above details, that neither one chancre, nor two, nor three, nor six, nor thirty-six, nor one hundred and thirty-six, have in the preceding cases induced secondary syphilis, and that, therefore, the direct operation of the inoculations has been exclusively limited to the spot where the chancres showed themselves. If such be the case, we are justified in assuming that no greater number of chancres will produce a different result. And this is confirmed by our experience ; for with one exception, to which we shall subsequently allude, not one of those individuals, previously free from all syphilitic taint, whom I have syphilized, have been affected by secondary syphilis ; nor have they shown any signs of the existence of the venereal diathesis in their systems. Nor, in those already affected with syphilis, have I observed under syphilization the slightest evidence of their having imbibed the poison afresh. So far from seeing in syphilization a new physiological fact, as Boeck denominates it, I have, on the contrary, found it confirm a long-established axiom, viz., that the simple soft chancre does not affect the system, and consequently does not produce constitutional syphilis. Among the many thousand artificial chancres that I have seen, I have not observed one (with a single exception) which was not of this character, both in my own practice and in that of my colleagues, and as inoculated on every part of the body. Even on the

face, the soft chancre followed inoeulation, contrary to Rieord's experience, who had always observed the indurated chancre there.

The exceptional case referred to in the above remarks is highly important, since it strongly confirms the position here assumed. Syphilization had been performed upon a leper with the virus of the soft chancre to the extent of nearly four hundred inoculations, when the scerction of an indurated ehancre was accidentally inoeulated. The inoculated point healed, but *a month afterwards an indurated sore appeared, followed by unmistakeable signs of secondary syphilis*, showing that the previous inoculations with the chancreoidal virus, which had been strictly local in their action, had afforded no proteetion whatever against true syphilis."

It was in the year 1851 that Professor Boeck, travelling through the northern part of Italy, had his attention drawn to the new doctrine of syphilization. On his return he was resolved to try the new plan as soon as he was "able to obtain some inoeulable virus." *This was not until the month of October 1852.* Surely this fact, we should have thought, would have suggested to the professor the idea, that the inoculation of the syphilitic poison does not always follow the same course, or produce the same results. He eannot mean to say that during the period mentioned he had no ease under his observation that he thought would be capable of communicating the disease in a natural way. If so, the disease in Christiana must be well-nigh extinct: what Professor Boeck evidently means is, that he was waiting for some pus which would pro-

duce well-formed pustules, or well-marked examples of the suppurative inflammation. But the fact, which we must take for granted, that he had under his observation at the time other cases which he well knew would be capable of communicating some form of syphilitic disease, shows plainly that he instinctively knew that the syphilitic disease was not always communicated by exactly the same morbid process. Artificial inoculation will, as already shewn, give rise to the adhesive form of inflammation, or to an indurated sore, in a person previously not infected; as well as to suppurating, or soft sore. The results of these different forms of inoculation are as distinct after artificial inoculation, as if they had been acquired in the natural way.

Professor Boeck believes that syphilization is the proper mode of treating syphilis, and that "in no disease have we a more certain method of cure." It is true that this mode of cure is, according to the professor's own showing, somewhat protracted, and is even followed by fresh syphilitic symptoms; but to these he pays no attention whatever, and says that they disappear of their own accord.

"If an individual suffering from severe constitutional syphilis can be assured of a certain cure in about six months, I think it must be allowed that the time is well employed. Immunity having been produced, and the symptoms existing at the beginning of the treatment having disappeared, new symptoms generally show themselves, especially sores on the mucous membrane of the mouth or fresh exanthematic eruptions or iritis. These disappear without treatment."

It appears from the above extract, that after immunity to further inoculation has been produced, fresh symptoms may be expected ; and yet Professor Bocck says, “whether this alteration (indicated by the immunity to further syphilitic inoculation) proves that the syphilitic virus no longer exists in the organism at all, I dare not say with certainty.” It would appear from this that the professor had some idea that the immunity to syphilitic inoculation and the existence of the syphilitic virus in the system were in some way necessarily connected. In order to clear up this point, it must be at once distinctly stated, that the immunity to suppurative syphilitic inoculation is one thing, the existence of constitutional syphilis another. These have no necessary connexion with each other, and, indeed, according to the professor’s own experience, where this immunity has been produced, unequivocal constitutional syphilitic symptoms “generally show themselves” at some subsequent time. Although, therefore, we look upon Professor Bocck’s experiments as giving us very valuable physiological and pathological facts, we do not see that he has at all established his position that syphilization is the best and most certain method of curing syphilis ; or that it matters not from what kind of chancre the secretion is originally derived, from which the inoculations are made.

Attempts to induce the state called ‘syphilization’ have not been so successful in France, as in Italy and Norway.

The following cases are recorded by Dr. Thiry of Brussels :—

CASE. A patient, who had had a variety of primary and secondary syphilitic affections, and had been subject to anti-syphilitic treatment for an indurated sore, was admitted into St. Peter's Hospital on the 4th of October, 1851. Several primary ulcerations existed at this time.

Oct. 7th. Three inoculations were made upon the abdomen from one of the primary sores. In twenty-four hours, each presented the characteristic pustule and areola.

Oct. 4th. Three inoculations were made as before.

Oct. 9th. Three inoculations were made with the pus derived from the first inoculations.

Oct. 10th. Three inoculations were made with the pus produced by the inoculations of the 7th. These had not increased in size, and were covered by a crust, which, when raised, allowed the escape of a considerable quantity of virulent pus. The inoculations made on the 9th had succeeded.

Oct. 11th. Three fresh inoculations were performed with the pus of the chancres inoculated on the 8th.

Oct. 12th. Three areolar pustules had followed the inoculations of the previous day. The pustules produced by the inoculations of the 10th showed a tendency to fade. Under each pustule there was some thickening of the cellular tissue, but not the least sign of specific induration.

Oct. 13th. The different inoculations, after having somewhat enlarged, faded away, and presented the starred appearance of some cicatrices.

Three inoculations were repeated on the 14th and

15th respectively. The latter became less developed than the former.

Oct. 16th. Three inoculations were made with the pus of the chancres inoculated the day before.

Oct. 17th. The inoculations of the 16th had succeeded, but in a very slight degree. Three fresh inoculations, made with the secretion of the most active sores, were followed by positive results.

The inoculations were continued on the 18th, 20th, 21st, and 22nd.

Oct. 23rd. The last inoculations had now only produced a slight papular elevation, having no characteristic appearance.

Oct. 24th. Three fresh inoculations were made with such remains of purulent matter as could be collected from the different sores ; one only of these inoculations gave rise to a papular elevation similar to those before mentioned ; the other inoculations afforded no result.

Three similar inoculations on the 25th ended in a papular elevation, still less marked.

On the 26th, 27th, 28th, and 29th, all the inoculations became cicatrised without induration. Some further attempts were made to inoculate this patient from the secretions of her own sores, but in vain ; nothing further was produced. But, on the 1st of November, this same patient was inoculated with the matter taken from the sores of another woman, who had also been subject to this treatment by syphilization.

Nov. 2nd. The inoculation had succeeded ; a vesi-

cular pustule had appeared, surrounded by a red areola, faint, it is true, but still characteristic. This vesicular pustule contained a sero-purulent fluid, which was again inoculated, and again produced its specific effects. Another series of inoculations was now again commenced from this fresh source of infection, and the inoculations all succeeded as at the first. At length, after fifty-seven inoculations in all had been practised the experiment was given up.

The inoculated sores were healed as soon as possible, and the patient left the hospital in the beginning of December.

In a second case, the attempt to induce syphilization was given up after sixty-three inoculations had been made, all of which succeeded ; and in a third case, after twenty-five artificial ulcers had been produced.

Such cases furnish a sufficient refutation of the idea that the state known or imagined as syphilization can be, at will, easily and artificially produced ; yet have we, on the other hand, direct evidence that individuals, and even nations, from artificial or natural causes, become susceptible to the influence of the syphilitic poison in extremely different degrees ; and we have conclusive testimony, as I believe, that the repeated inoculation of syphilitic matter, whether by artificial or natural means, and whether derived from an infecting or from a suppurating sore, tends to produce, although in very different degrees, a modification of the effects of the poison, when again inoculated on the system.

One circumstance in particular must strike all who

read attentively these descriptions of repeated syphilitic inoculations, namely, that they are accompanied by no lymphatic absorption, and are followed by no eruptions on the skin or other signs of constitutional syphilis. The vast majority of these experiments have doubtless been made on persons previously syphilitic, and this would account for no fresh secondary symptoms appearing in their case. But a large number of patients who were not constitutionally syphilitic, have also had the secretion from their own suppurating sores inoculated upon themselves ; and yet, out of the great number of cases in which such experiments have been tried, there are scarcely any in which either lymphatic absorption, or any form of secondary disease, has subsequently appeared. This can only be accounted for by the fact, that the secretion from the suppurating form of chancre has, exclusively, been used for the purpose of inoculation in these cases. It will, no doubt, occasionally, although very rarely, happen that a rash or an eruption will follow repeated artificial inoculation ; but when it does, it has not the characters of a syphilitic eruption.

CASE. A gentleman, who had for four years been under the care of some of the first medical men both here and upon the Continent, and who had fairly exhausted all the ordinary modes of treatment, became desirous, as a last resort, to try a modified course of syphilization. He had at the time a deep copper-coloured eruption, considerably raised in parts, upon the head, face, and neck, with patches of a similar kind on various parts of the body, and a large ulcer on the foot.

On the 13th of April, some pus was taken from a suppurating sore of the phlegmonoid variety, and inoculated in three points upon this patient's arm.

April 16th. Three inflamed pustules had formed. Two fresh inoculations from the secretion of one of these pustules were made upon the upper arm.

19th. The inoculations of the 13th had all become surrounded by induration, which became less and less from the centre towards the circumference. They were all broadly fringed with a halo of a pinkish-red colour, which gradually faded into the colour of the surrounding skin. The diameter of this redness was about the size of a sixpenny piece. The inoculations of the 16th had become pustules, not surrounded by much redness. Two inoculations with the secretion of the inoculations of the 16th were performed on the left side of the abdomen.

22nd. The hardness around the inoculations first made was less. These presented the appearance of circular ulcers, with raised edges, affording an abundant secretion of pus. The inoculations, second in order, were surrounded by induration, but not to the same extent as the first. The inoculations of the 19th had become well-formed pustules, surrounded by redness to a very slight extent. Two fresh inoculations were made on the abdomen, below those last mentioned.

26th. The inoculations of the 16th were now surrounded by more general diffuse induration than those first made. Two fresh inoculations were made below those of the 22nd.

28th. The inoculations of the 26th present the appearance of very small pustules (forty-eight hours). The inoculations of the 19th discharged a large quantity of pus, and were surrounded by considerable irritation. The inoculations of the 22nd were much less inflamed; those of the 26th still less. Two fresh inoculations.

May 2nd. The original inoculations on the arm were still very irritable. They appeared as circular ulcers, with slightly undermined, but raised edges, surrounded by a red areola. The inoculations made on the abdomen were each in succession less in size with less inflammation and less secretion than those of a previous date. Two fresh inoculations with the matter taken from the previous inoculations which furnished the largest amount of secretion. (See Plate I.)

6th. The inoculations last made appeared as very small irritable points, affording scarcely any secretion. The inoculations on the arm were still red, inflamed, yielding an abundant secretion of pus, and presented something the appearance of boils after they have been some days opened. The inoculations first made on the abdomen had the same character. The edges were raised, red, and terminated quite abruptly. The secretion of pus from these was most abundant. Two fresh inoculations from the sores on the abdomen yielding the largest amount of secretion.

13th. The syphilitic eruption on the face, neck, and head now showed a decided improvement. The ulcers resulting from the inoculations first made were nearly three-fourths of an inch in diameter.

17th. An eruption of a brick-red colour, somewhat resembling nettlerash, or the eruption which follows the use of eopaiba, appeared on the upper part of the left thigh. It was raised above the surface, with small intervals of nearly healthy skin. It was accurately defined, and strictly limited to the upper part of the thigh, and was totally unlike any eruption which the patient had previously had.

21st. The eruption had extended, still with a defined outline and minute intervals of comparatively healthy skin. Portions of it were of a more livid hue than before.

23rd. The accompanying drawings, made this day by Dr. Westmacott, represent the appearance of the inoculations (with the exception of those second in order), and also the eruption which resulted from them, and which, in my opinion, was not of a syphilitic nature.

Plate 1, fig. 1, represents the inoculations first made as they appeared on the forty-first day, still in a state of progress.

Fig. 2 represents the third set of inoculations, as they appeared on the thirty-fifth day of their development; the fourth set on the thirty-second day; the fifth set on the twenty-eighth day; the sixth set on the twenty-fourth day; the seventh set on the twenty-second day; and the eighth set on the eighteenth day.

At this period the eruption had lost much of its peculiar brick-red colour, and had assumed generally a livid hue.

27th. The eruption of the thigh had much faded. The surface over which it extended was now of a more livid hue, but there were still visible a few scattered points of a brick-red colour. The margin of the affected skin was perfectly well defined, and the skin in the neighbourhood had undergone no alteration in any respect. The inoculations on the arm showed a slight tendency to contract. Those subsequently made also showed a disposition to heal. The syphilitic eruption on the face and other parts had improved in character. The patient attributed the improvement to the inoculation, and remarked that some patches of eruption on the arm and body, that no previous treatment "could move, have now altered their character."

June 4th. The eruption on the thigh was dying away.

11th. The first inoculations were now covered with thickened skin. They were still surrounded by induration, which gradually diminished to the consistency of the surrounding parts. The inoculations second in order had fairly healed. The inoculations last made, which a few days before had nearly healed, now assumed a slight tendency to spread. There was a marked improvement in the old syphilitic symptoms. Patches of eruption had in a great measure lost their colour, and healthy portions of skin appeared upon their site. The ulcer on the foot, which had remained unhealed for between two and three years, had much improved. The eruption on the thigh (consequent, as I believe, upon the inoculation) had entirely disap-

peared without treatment, but the skin over which it had spread was of a slightly purple colour.

This patient was now recommended to go into the country, and shortly after left England for the Continent. The face was then quite clear, but some patches of eruption still remained on the body. From the commencement of the inoculations, no internal treatment was adopted which could have influenced the course of the disease.

14th. The patient from whom the pus was taken, for the purpose of inoculation, presented himself. His sore had healed a fortnight ago, leaving non-specific induration under the skin, but not in the skin. He was quite free from any appearance of constitutional disease.

Upon his return from the Continent, the patient's symptoms, which had apparently been relieved by a short course of syphilization, again appeared, and continued as before, modified perhaps, but certainly not cured, by the treatment.

The character of the inoculated sores in the above case accurately resembled that of the sore from which the secretion was originally taken, allowance being made for the difference of situation. In both cases the sores were surrounded by induration ; in both they yielded a copious secretion of pus ; and in both they were followed by an eruption confined to one part of the body, and disappearing permanently without any specific treatment.

LECTURE IV.

SYPHILITIC INOCULATION IN ANIMALS.LYMPHATIC ABSORPTION.

ALTHOUGH many attempts had previously been made to inoculate animals with syphilitic matter, no satisfactory results were obtained until within the last few years. Hunter had made a variety of experiments upon the subject, and had concluded that man alone was susceptible of the influence of syphilitic poison. Many other physiologists arrived at the same conclusion. Even Ricord, in his treatise on syphilis, says that he had tried to inoculate syphilitic matter, under every possible condition, on dogs, cats, rabbits, guinea-pigs, etc., without ever being able to communicate the disease. Until very lately it was, in fact, universally received as an axiom, that human beings alone could be infected with the syphilitic poison. In the year 1844, M. Auzias-Turenne commenced some fresh experiments upon this subject. Among his subjects was a monkey, paralytic in his upper extremities, and who, consequently, always remained sitting up; in this position it was impossible for him to lick some parts of his hinder extremities, and M. Auzias found that

upon those parts he could inoeulate him, but that it was impossible to do so upon parts that he could reach with his tongue. He, therefore, in subsequent experiments, selected the back of the ear, adjoining the mastoid process, as the most favourable situation. He performs the operation with a pair of curved pointed seissors, with which he cuts through the epidermis, so as not at the same time to cause any effusion of blood. The matter to be inoeulated is then placed upon the part, either diluted or not with a little saliva. If the puriform fluid is thick, there is danger that it will dry and congeal around the poison, and so prevent it from producing its action on the surrounding parts. Some amount of dilution is necessary occasionally to prevent this. The inoeulated point is kept moist for about a minute, and the skin in the immediate neighbourhood is rubbed gently with a soft instrument, so as to excite vascular action in the part.

The day after this operation, according to M. Auzias, a pimple shows itself on the inoeulated spot. The third day a vesicle appears, and twenty-four hours later a pustule. These appearances, which are perfectly regular in their succession, may take a longer or a shorter time in developing themselves; they result in the formation of a chancre, covered by a crust. The chancre is round, and becomes larger; an abundant and deep-coloured suppuration raises the crust, and the epidermis for some distance around the neighbouring skin is warm, red, and swollen. The pus secreted escapes underneath the edges of the scab, which it raises and detaches. The escape of the pus is often

assisted by the animal scratching himself, which he is very likely to do on account of the irritation produced.

After a certain quantity of pus has escaped, the parts become less tense. The edges of the scab again adhere to the subjacent parts, or if it has been removed, it is formed again in small detached portions. There is some retraction of the epidermis, which becomes starred around the chancre, and is thrown off. The chancre follows its course for several days, and the last-mentioned actions (those which occur subsequently to the formation of the pustule) are repeated several times. At length the sore becomes smaller, and finally disappears without ever having lost its characteristic appearance of a chancre on the skin. "It is possible," says M. Auzias, "to propagate a chancre in this way from animal to animal, in successive descent, for an indefinite number of times, without the virus losing its efficacy."

The fact having been proved that the syphilitic virus might thus be communicated to an animal, some intrepid experimenters undertook the farther task of ascertaining whether the poison, in being transmitted through an animal, had lost any of its virulence, or had become modified in its action.

On the 5th of June, 1850, M. Auzias inoculated a healthy monkey on the anterior part of the right helix, in two places, a little distance from each other.

M. Robert de Wetz, four days afterwards, inoculated himself with the pus derived from the ulceration on the monkey's ear. The operation was performed on

the 9th of June, at eleven o'clock in the morning. On that and the following day no results appeared.

On the 12th, in the afternoon, M. Wetz was surprised to find that the epidermis was raised over the inoculated spot by fluid, and that it was surrounded by a red halo.

On the morning of the 13th, the vesicle burst, and a drop of pus of a greenish yellow colour escaped. The red areola had at this time slightly increased.

On the 14th, the inoculation was covered with a light scar, beneath which was a grey lardaceous surface, surrounded by a well defined margin. The subjacent tissues were becoming inflamed, infiltrated, and indurated.

On the 15th, at noon, the secretion of pus had increased. The surrounding tissues were inflamed to some extent, and the motions of the arm had become painful.

On the 16th, the chancre had increased, with an increase of inflammation in the surrounding tissues. M. Wetz now experienced a slight shivering, followed by a sensation of heat, weakness in the limbs, and vague pains in the joints. His head then began to ache, his appetite left him, and the water became of a deep red colour. The next day, all these symptoms had disappeared ; but there was a slight eruption of roseola on the skin. On the tenth day the inoculation was destroyed with Vienna paste.

M. Wetz inoculated himself a second time with the pus taken from the monkey, with similar results, with the exception that the second inoculation on him at-

tained at the same period of its development a much larger size, and the cellular tissue around was inflamed and indurated to a much greater extent. It was, however, impossible to determine whether this induration depended in any degree upon the specific action of the poison on account of the surrounding inflammation.

Not satisfied with these results, M. Wetz inoculated himself with the pus taken from the sore on the monkey's ear a third time. He took the precaution of using only instruments which were quite new, and had never been used. The results this time were not so soon developed. On the first two days nothing appeared ; but on the third day it was evident the inoculation had succeeded, and on the seventh day it presented the character of a well-developed chancre. This inoculation, like the former, was followed by a violent inflammation in the surrounding cellular tissue. But in none of the instances was there any enlargement of the axillary glands. M. Wetz undertook to make known publicly if any subsequent symptoms showed themselves ; and as there has been as yet no intimation to that effect, we must believe that none occurred.

With a courage worthy of a better cause, M. Robert also tried upon himself some similar experiments.

On the 16th of August he took from two simple chancres, in full activity and on the tenth day of their existence, some pus, and inoculated it on the middle of the inside of the ear of a cat three months old, and in perfect health. On the 18th, a hard point the size of a pin's head presented itself.

19th. The puncture was covered by a crust, beneath

which was a superficial round ulceration, a line in diameter, and exuding a milky puriform fluid. This sore was situated upon an induration, which caused a prominence on the outside of the ear, and which could readily be detected by the touch. On the same day, some of the pus from this inoculation was transferred to the corresponding part of the left ear of the same animal.

20th. The first inoculation, covered by a yellowish red crust, presented a circular bluish wound, from which exuded a certain quantity of milky white pus. M. Robert took some of this secretion on a clean lancet, and inoculated himself on the lower and external part of the left arm.

21st. The chancre on the right ear was still hard, covered by a crust, and exuding a milky pus. The inoculation on the left ear was covered by a brown crust, and rested on a circular induration. This scab was removed, and by squeezing the wound a purulent bloody fluid was obtained ; with this M. Robert inoculated himself again on the upper and back part of his left forearm.

We will trace the history of these two inoculations separately. But first it may be interesting to see what became of the inoculations on the cat's ears.

On the 22nd, the fourth day of the inoculation, the sore on the left ear was situated upon an accurately circumscribed induration. This was of the size of a split pea, red at its base, and covered by a thick crust, from beneath which a certain quantity of milky pus was expressed. When this scab was detached, a round

ulcer was seen, two lines in diameter, and bathed in pus. This pus was, in its turn, inoculated on the ear of another cat. On the third day this inoculation presented a pustule, terminating in a white point, very hard at its base, and surrounded by a red areola.

At this period, the first inoculation, which was done on the 16th (now the ninth day) appeared to be healing, and only presented a small hard granule covered by a crust. The inoculation of the 19th (on the sixth day) consisted of a very hard circumscribed kernel, covered with a crust. Beneath this was a round ulcer with sharp edges, covered with a milky pus.

On the 25th of August the inoculation of the 16th had healed ; that of the 19th was hard and covered by a crust, but on the 28th it had become completely cicatrised. The remaining inoculations, which consisted of many more than I have mentioned, all healed from the eighth to the twelfth day, leaving always after them a little induration which gradually disappeared.

This induration is regarded by M. Auzias as a general consequence of these inoculations. But M. Maisonneuve and others believe that an indurated sore after the artificial inoculation of animals is the exception and not the rule. They say that M. Auzias has mistaken the thickening and condensation of the inflamed tissues for specific induration. The facts already considered, in the previous lectures, demonstrate that all these inoculations were made with the secretion from suppurating non-infecting sores. No evidence has hitherto been adduced to shew that any animal was ever inoculated from an infecting sore.

I will now return to the inoculations which M. Robert practised upon himself from the pus derived from the ulcers produced by artificial inoculation on the cat's ears.

On the third day, the first of these above the elbow was surrounded by a deep red circle, in the centre of which was a pustule as large as a pin's head. This was accompanied with very little swelling or pain.

The fourth day it presented a sore, a line in diameter, with sharp edges, covered by a thick pus of a yellowish colour and surrounded by a red areola. This was proved to be a real chancre, by the secretion from its surface being successfully inoculated on the ear of a cat.

The sixth day, the sore afforded an abundant secretion of pus and was increasing in size.

On the twenty-second day, it was the size of a half franc piece, presenting an irregular surface. The granulations were sometimes pale, and covered with matter which was very easily removed; sometimes red, and secreting a creamy and apparently healthy pus.

On the thirty-second day, healthy granulations appeared; and ten days later the sore was healing, and presented a raised cicatrix.

At the expiration of fifty-seven days, the sore had completely healed.

The second inoculation M. Robert practised, as I mentioned, on the upper and back part of his forearm. On the following day, there was a brown point surrounded by a red areola, darker coloured towards its centre, and slightly raised above the surface of the

surrounding skin. The base of the inoculation was hard and infiltrated like an incipient boil. Upon the inner side of the elbow there was a dull pain increased by pressure. On a level with the painful part was a reddish line, arising from the red areola around the inoculation, and proceeding below the elbow to the front, and thence ascending parallel to the vessels and nerves along the inner side of the arm. This was accompanied by headache, want of appetite, and a fixed pain in the left shoulder.

M. Robert now abruptly gave up the idea of trying any more experiments with regard to syphilization on himself. By the advice of some friends, he cauterised the second inoculation with the Vienna paste. In the evening, the eschar was surrounded by an extensive circle of inflammation. There was pain in the armpit with appreciable swelling, and the arm felt numb and tired. Towards the evening of the next day, a lymphatic gland immediately above the elbow became enlarged and very painful. The lymphatic vessel leaving its upper part could be traced by an inflammatory blush towards the axilla, in which there was a superficial enlargement, painful on pressure. The limb now became hot and heavy. Transient fits of shivering crept over the body, and the palms of the hands were dry and hot.

On the sixth day of the inoculation, and on the fifth of the cauterization, there was an erysipelatous redness around the eschar, phlegmonous swelling of the forearm, sleeplessness, nervous pains in the head, pains and cold creepings over the limbs. The swelling

of the gland on the inner side of the arm was increased, and there was pain on moving the shoulder.

The ninth day, the eschar made by the caustic separated, leaving an irregular ulcer with sharp edges, and covered with a yellowish grey matter. The edge of this ulcer nearest the inflamed gland was undermined, and the whole presented an unhealthy appearance. There was much pain and tenderness of the wound ; the whole arm was œdematous, with darting pains in the axilla. Some matter taken from the surface of this wound was now successfully inoculated on the ear of one of the cats, showing that the poisonous character of the sore had not been destroyed by the caustic.

On the fourteenth day, an opening was made into the swelling on the inner part of the arm, and a quantity of well formed creamy pus evacuated.

On the fifteenth day, the inoculation was still painful. It presented a gangrenous and bleeding surface with a hard base, surrounded for some distance with œdematous infiltration.

On the twenty-first day, it had become less painful, but still presented a pultaceous and bleeding surface, with hardened and sharp edges.

On the thirty-first day, the surface of the ulcer was becoming cleaner and its edges less prominent ; the œdema and swelling had disappeared, but the edges of the wound left by the suppurated gland were ulcerated, and had a syphilitic appearance.

On the forty-first day, this sore had again assumed a phagedænic appearance. Its edges were undermined,

inflamed, and very painful. The pus discharged was tinged with blood. The wound resulting from the open bubo was becoming clean, but its edges were undermined and sharp.

A fortnight after this, the surface of the sore again became healthy ; and ten days later, the bubo began to cicatrize.

After lasting from the 21st of August to the 29th of October, the sore was all but healed, and the bubo resulting from it was completely cicatrized.

M. Robert had at this time regained his habitual health, and subsequently experienced no farther inconvenience. The cats also remained well and showed no indications of having had their constitutions affected ; nor did they suffer from enlargement of the glands consequent upon the inoculations.

From his experiments, M. Robert arrives at the conclusion that—

The syphilitic virus inoculated upon the ears of cats determines a slight ulceration which exists for eight or ten days, and secretes a purulent fluid.

When this pus is inoculated on the same, or on another animal, it occasions an ulceration exactly resembling the one from which it was taken. When inoculated on man it gives rise to a chancre in the same way as if the syphilitic poison had been taken directly from man.

The ulceration in animals lasts on an average from eight to ten days.

It occasions in them neither inflammation of the absorbents nor secondary symptoms.

When several inoculations are made on the same animal, whether the pus be taken from the animal itself, or from man, the last are neither more nor less intense than the first. They all follow exactly the same course.

In this last respect, M. Robert's experience is at variance with that of M. Auzias-Turenne.

To complete the history of this kind of inoculation in animals, and from them to man, the experiments of M. Diday may be mentioned. In one of these he inoculated the secretion of a chancre upon the ears of a cat. The inoculations proved successful, and he introduced some of the virus thus obtained into his own person. The result was a phagedænic chancre and bubo, which remained open for four months before cicatrization took place, and seriously affected his general health. No secondary infection of the system, however, took place, thus proving the matter used to have been from a soft sore.

LYMPHATIC ABSORPTION.

Physiologists have usually recognized three modes by which absorption may take place :—

I. That by which foreign substances find their way directly into the blood through the coats of the blood vessels.

II. The absorption of the chyle from the mucous surface of the intestines by the lacteals.

III. Absorption by the lymphatics.

To these three modes of absorption, by all of which

extraneous substances have been supposed to enter the circulation, we may add a fourth means by which the system may be influenced by the action of some kinds of poisons; namely, that in which a direct local effect is produced upon the nerves of a part, and through them upon the brain (and consequently upon other organs), without the poisonous material being taken into the blood.

Examples of this mode of the action of poisons are afforded by the effects of the juice of the leaves of the aconite, and of the infusion of tobacco, as illustrated in some of Sir B. Brodie's physiological experiments.

In most instances the action of a poison commences immediately upon its application. But in the case of morbid poisons, a certain interval must elapse, and a certain morbid process must be gone through, before these can produce their specific actions upon the general system.

The deleterious materials of which these poisons essentially consist, or the secretions in which they are contained, may be applied to the living body in any quantity, and for any length of time; and unless the process, which is peculiar to each of them respectively, be gone through, their characteristic effects will not be produced upon the constitution.

If the particular action by which these poisons individually enter the system be disturbed or interfered with—so as not to be carried out—other results may follow, but their general and specific influence will not be experienced. If the first step in the process be defective, so will be its natural consequences.

The knowledge which we thus obtain furnishes us with a most important power ; for, by modifying or altering the morbid process by which a poison enters the system, as for instance, by the early application of caustic to the infected part, we may, under certain circumstances, modify or control its effects.

I purpose now to consider how far the action of the syphilitic poison upon the constitution may be thus modified or controlled, by the kind of action which is produced when it is first applied to the living tissues of the body. For this purpose it is requisite to consider what the morbid actions really are by which the syphilitic poison gains an entrance ; and what the natural processes are by which it joins itself to, and becomes as it were incorporated with, the living being.

The opinions of Hunter on the absorption of the syphilitic poison have given a bias to all subsequent reasonings upon the subject ; and the theories based upon his experiments are very generally received even up to the present time. He demonstrated, as he believed, that the lymphatic vessels were the true absorbents ; and he concluded from his discovery that they were the *only* absorbents in the system.

The experiments upon which his idea was founded , deserve attention. Assisted by his brother and several other eminent medical men, he confined some warm milk in a portion of small intestine ; and having tied the artery and vein which supplied the intestine, he saw, as he believed, the lacteals of the part presently become filled with the white milk. Upon puncturing the vein upon the distal side of the ligature, it was soon

(by pressure of the finger) emptied of its blood. No white fluid could, during the continuance of the operation, be found in the vein. Upon a repetition of the experiment, in which the circulation through the mesenteric vessels was left free, the blood in the vein was carefully examined and compared with that in the neighbouring veins, but it was found not to be light coloured, nor milky, nor could any difference whatever be detected in it. It was found that even by firm pressure, which was continued until the intestine burst, the milky fluid could not be made to pass into the veins.

In another animal, some thin starch, coloured with indigo, was introduced into the small intestine, and the lacteals were soon afterwards seen of a fine blue colour. A vein in this part of the mesentery was opened, and the blood which flowed was allowed to separate into coagulum and serum. The next day the serum had not the least blueish cast.

An injecting pipe was then fixed in an artery of the mesentery, where the intestine was filled with blue starch; and all communications both in the mesentery and intestine were closed, with the exception of the vein corresponding with the artery. Warm milk was now injected until it returned by the vein. This was continued until all the blood was washed away, and the vein returned a bright white milk. The milk thus circulating through the intestine containing the blue starch was not in any degree changed in colour.

In a third animal, some musk in warm water was confined in a portion of the intestine; after waiting a

little time, some of the lacteals of the part were opened with a lancet, and some of the watery fluid which they contained was received into a small spoon. This was thought to smell strongly of musk. Some blood received into a clean spoon from one of the veins of the same part had not the least smell of musk.

From these and similar experiments, Hunter arrived at the inference, which must have appeared one of the greatest discoveries of his age, *that the veins do not absorb in the human body*. It necessarily followed from this that the lymphatics were to be considered as the only absorbents; and this is stated by Hunter to be the fact, in his work on the venereal disease.

If the lymphatics were the only absorbents, they must of necessity have been looked upon as the only channels through which poisons could, under ordinary circumstances, enter the system; and accordingly we find Hunter asserting that the venereal matter is taken up by the absorbents of the part in which it is placed, and carried along the absorbent vessels to the common circulation.

This view, deriving as it does such an apparent confirmation from the frequent occurrence of inflammation of the lymphatic glands in venereal diseases, was adopted with more or less modification by almost all the writers on syphilis who followed Hunter.

The accuracy of the experiments upon which Hunter based his theory has, however, justly been doubted by other physiologists; but the theory itself, as regards the syphilitic poison, was up to a recent date, strange to say, scarcely questioned.

MM. Tiedmann and Gmelin, after mixing various substances, which might easily be detected, with the food of animals, not unfrequently found unequivocal traces of these substances in the venous blood and urine, whilst it was only in a very few instances that traces of them could be discovered in the chyle.

In repeating Hunter's experiments, Mayo found that half an hour after a solution of starch and indigo had been placed in the cavity of the intestine, the lacteals appeared of a clear blue colour; and those present were for a time satisfied that the indigo had been absorbed. But upon placing a sheet of white paper behind the mesentery, it was found that the blue tinge had disappeared. On removing the white paper, the vessels reassumed their blue colour. It became, therefore, evident that the blue tinge was the natural colour of the empty lacteals;—that while they continued to absorb the chyle they were white, but that as soon as they were simply empty they appeared blue.

Thus a repetition of the Hunterian experiments rather tends to prove that the function of the lacteals is limited in the absorption of chyle: and that the lymphatics are not the only absorbents, appears most conclusively demonstrated by the experiments of MM. Magendie and Ségalas. M. Ségalas varied Hunter's experiment in the following manner:—A fold of small intestine was drawn out of a wound in the belly of a dog; all the blood-vessels passing to and from it were tied, with the exception of one artery; a vein punctured upon the mesentery allowed the blood to escape, which would otherwise have stagnated in the part.

The lacteal vessels and nerves were left entire. The fold of intestine was then tied at both extremities, and an aqueous solution of the alcoholic extract of *nuxvomica* was poured into it. During the hour which followed, the poison produced no symptoms. The ligatures being then removed from one of the veins, the blood was allowed to return in the natural course of its circulation. In six minutes from this time the poison took effect.

The experiments of M. Magendie illustrating the same point are well known.

The thigh of a dog was separated by M. Magendie from the body, by a division of every part, with the exception of the artery and vein; into each of these vessels a quill was introduced, and tied by two ligatures; between these ligatures the vessels were divided, and thus all communication was cut off between the body and the limb, except that which was maintained by the circulation of the blood. Two grains of the *upas tieuté* were then inserted into a wound in the foot of the separated limb. In about four minutes the poison manifested its effects upon the system.

From these and other facts, it appears certain that Hunter's idea of the lymphatics being the only absorbents is incorrect; and we are thence naturally led to the consideration of the value of the theory of the mode of absorption of the syphilitic poison, which was based upon that notion.

When lymphatic absorption takes place in connexion with a suppurating syphilitic sore, the action of the poison may be traced in the clearest way along

the absorbent vessels. In any part of its course, the poison may inoculate the vessel in which it is contained, and may produce a fresh syphilitic sore, the secretion of which may again be inoculated. It usually happens, however, that the inguinal gland in which the absorbent vessels terminate is the part affected. Here alone, in the great majority of cases, does the poison exercise its influence upon the absorbent system; but that the poison actually passes, as such, through the absorbent vessels, we have abundant proof in the specific effects of the poison in the course of those vessels. Between the lymphatic gland and the primary disease, a small abscess will occasionally form. This will present tumid and irritable edges, will afford all the characteristics of a suppurating syphilitic sore, and will furnish an inoculable secretion. We can then distinctly trace the entrance of the syphilitic poison into the lymphatic vessels, and from them into the absorbent glands in which these vessels terminate. The actual existence of the virus in any part of this course may be demonstrated by experiments, which have been far too often repeated to require any additional confirmation. Arrived at this point of its course, on its way apparently towards the thoracic duct, and from thence to the general circulation, what becomes of it? A very wonderful change is here brought about. The specific virulent poison, which before was liable to contaminate every living part that it came in contact with, cannot be traced beyond this point. The absorbent vessels between the inflamed gland and the thoracic duct do not ulcerate or suppurate; the

glands into which they empty themselves do not become enlarged or inflamed. The influence of the poison is here then gone. Beyond the glands first in order, the fluids which the absorbent vessels contain are bland and harmless, incapable of being inoculated, or of infecting any part with which they come in contact. What then has become of the poison? We find it in the vessels going into the inflamed absorbent glands, but we do not find it in the vessels which proceed from those glands. In a certain number of cases, no doubt, the poison is in great measure discharged in the suppuration to which its presence gives rise. But, when we consider the exceedingly minute quantity of an animal poison that is capable of producing its specific action on a part, this explanation is not sufficient. Some of the fluid or particles which enter the gland must, in some form or other, we should think, pass through it, whether it suppurate or not. Even although we should suppose that the inflammation produced in the gland entirely obstructed its channels, still, before such obstruction could take place, some fluid would surely have time to pass; and this, if its quality remained unchanged, would be sufficient to inoculate any part with which it came in contact, or to infect the general system.

A similar series of phenomena may be observed in the affections of the lymphatic vessels which accompany an indurated primary syphilitic sore, with the exception that the action in the glands is of the same nature as that which constitutes the primary disease. The poison taken up by the lymphatics may during the

earliest stage of the disease inoculate a lymphatic vessel ; and it almost always inoculates one or more of the lymphatic glands, so as to produce in them exactly the same kind of disease as existed in the part from whence the morbid material was derived. But beyond the lymphatic glands first in order, no farther effect is produced upon the lymphatic vessels. The fluids which they contain are bland and harmless, and afford no indication of containing any poisonous or irritating ingredients.

Up to this point, then, we have unequivocal evidence of the presence of the syphilitic poison, and of its power of contaminating fresh parts. Beyond this, the poison can no longer be traced. The fluids in which it was before contained now neither possess the power of irritating the vessels through which they pass, nor, when extravasated from these vessels, of infecting other structures. Here, then, some wonderful change is produced. The specific characters of the poison can no longer be detected either by its morbid effects, or by inoculation. Even Hunter noticed this circumstance. He says, "we never find the lymphatic vessels or glands that are second in order, affected." And he remarks that, when the disease has been contracted from a cut upon the finger, he has seen the bubo come on a little above the bend of the arm, upon the inside of the biceps muscle. In such instances no bubo has formed in the arm-pit, the most common place for glands to be affected by absorption.

Virehow has noticed the same point. In speaking of the occasional introduction—or intravasation, as he

terms it—of pus and other diseased products into venous and lymphatic vessels opened by abscesses and ulcers, he remarks that the transit of pus by lymphatic vessels is not at all uncommon, but he contends strongly against the production of general pyæmic infection by this means. “All the lymphatic vessels,” he says, “which are in a condition to take up pus in this way are peripheral ones, whether they arise from external or internal parts, and only after a somewhat lengthened course do they gradually reach the blood vessels. In all, interruptions are formed by the lymphatic glands; and since we know that the lymphatic vessels do not pass through the glands as wide, tortuous, and interlacing canals, but that, after they have broken up into fine branches, they enter into spaces which are filled with cellular elements, it is manifest that no pus-corpuscles can pass a gland.” This very important point of view, although it meets with the best possible confirmation in the daily experience of the practical physician, is generally overlooked, as Virchow conceives. He instances the process of tattooing. However minute the subdivision may be of the substances introduced, we never find these conveyed beyond the nearest lymphatic gland. In proof of this statement, Virchow adduced an example in which substances, introduced for this purpose by a soldier fifty years before, had not penetrated farther than the nearest lymphatic gland, as proved by microscopical examination of the parts.

Although, as he remarks, these glands act as a filter, in mechanically retaining the coarser particles, con-

tained in the current of fluid passing through the glands, that is not by any means their whole office. "They have manifestly another part to play, inasmuch as the substance of the glands indubitably takes up into itself certain ingredients from the fluid mass of the lymph, retains them, and thereby also alters the chemical constitution of the fluid, so that it quits the gland all the more altered, because it must at the same time be assumed that the glands yield up certain constituents to the lymph, which did not previously exist in it." Virchow illustrates these statements by an appeal to ordinary phenomena observed in cases of malignant tumour and syphilis. "When an axillary gland becomes cancerous, after previous cancerous disease of the mamma, and when, during a long period, only the axillary gland remains diseased, without the group of glands next in succession or any other organs becoming affected with cancer, we can account for this upon no other supposition than that the gland collects the hurtful materials absorbed from the breast, and thereby for a time affords protection to the body; but at length this protection proves insufficient; and perhaps at a later period the gland itself becomes a new source of independent infection to the body, and a further propagation of the poisonous matter may take place from its diseased parts."

Neither observation nor experiment, then, afford any proof that the syphilitic virus is conveyed, as such, through the absorbent glands; all the direct evidence which we have points to an opposite conclusion. The particles in which the poison resides

here undergo some change, become perhaps disintegrated, and after that process the effects of the poison in the lymphatic vessels appear to cease.

The evidence upon which it has been assumed that the syphilitic poison enters the system through the absorbent vessels must, therefore, be regarded as most inconclusive. Arrived at the first lymphatic gland which it meets, and there undergoing some change, it becomes incapable any longer of producing its specific effects ; and we cannot therefore admit that this is the way in which the system becomes infected after the specific primary adhesive action.

If we reflect upon the different ways in which foreign substances can be taken into the living body, we shall find that every such way is furnished with certain sentinels or guards, which oppose the entrance of materials which, if admitted, would prove injurious. Whenever any irritating matters are applied to the skin, which might, by being absorbed, become injurious to the system, I need scarcely remind you how the delicate sense of touch informs us of what is going on, and urges us to get rid of the offending material. This is a sense common to the whole body. But the parts through which foreign matters are usually taken into the system are guarded in an especial manner. Thus, in addition to the sense of touch, we see the mouth guarded by the sense of smell and that of taste: three out of five senses concentrated around the opening by which the food enters into the system ; and one at least of the other two always ready to assist in affording information of its nature. If we trace the

food onward, we find that it has to pass the double row of teeth, which are acutely sensible to the presence of any hard particles that may have become accidentally mixed with it. Should any fresh flavour be produced in the process of mastication, there are the means provided for appreciating it as the food passes through the posterior fauces. The stomach we find ready, in its turn, to reject that which is injurious ; and, throughout the alimentary canal, there is an apparatus composed of a multitude of different parts, all combining to hurry on and eliminate from the system any materials which, if left, would be detrimental to it.

Finally—and this brings me back again to my subject—we have a wonderful system of minute capillary tubes (endowed with the faculty of distinguishing, so to speak, the chyle from other matters), taking up, and pouring freely into the blood, that which is required for the nourishment of the system, but refusing to admit anything else. These lacteals, I need not remind you, are very similar indeed in structure, in disposition, and in function, to the absorbent vessels elsewhere. It is true that we cannot trace equally well the processes involved in the assimilation and absorption of the different individual organs of the body, as in the analogous actions which convert the food originally into part of the living being ; but, from what we do know, we have abundant evidence that the same care is taken with regard to each part as with respect to the whole ; and we have reason to believe that other channels, through which foreign matters may enter the system, are guarded with the

same care as that by which the common food is received.

Such facts would lead us to the *à priori* conclusion, that some means must exist to prevent the indiscriminate introduction into the circulation of any materials which might find their way into the absorbents during the active ulceration of a part ; and observation demonstrates to us that such a provision really exists. The particles taken up by absorption ultimately again form part of the general circulating fluid from which they were at first derived. They have as much to be assimilated as animal matter taken fresh into the stomach. The bone, the tendon, the muscle, the nerve, which are thus removed, can no longer be recognized as such after they have been acted upon by the absorbents. All the different tissues that undergo this process form a single fluid, which ultimately becomes a part of the general circulating mass, and can then in no way be distinguished from similar products derived from the process of ordinary digestion. The action which converts foreign animal matter into blood, and that which converts parts of the living body into blood by the agency of the absorbents, are then analogous ; and they agree in having the very remarkable property of converting some substances, which when introduced in any other way act as poisons upon the system, into harmless agents. It has been shown by the Abbé Fontana, that the poison of the viper, when introduced into the stomach, undergoes some change which prevents its poisonous effects upon the system. It has also been shown by two French physiologists,

that the same thing happens with regard to the Woorara poison ; and we have it upon no less authority than that of Sir B. Brodie, that opium may be digested in the stomachs of some animals, and that in that process its poisonous qualities are destroyed. “I have injected,” says Sir B. Brodie, “a strong watery solution of opium into the stomach of a rabbit, but no poisonous effect was produced, although a similar solution, injected into the cellular membrane, occasions stupefaction and death.” In like manner, as I have before intimated, we find that cancerous matter cannot be propagated from a part to the general system through the lymphatic glands ; but we have evidence to prove that it may, under certain circumstances, be so propagated through the blood-vessels. It is true that the veins in the immediate neighbourhood of a cancer are very frequently blocked up with coagula, affording another instance of the preservative power above mentioned ; but, when this is not the case, the cancer cells may apparently be conveyed in the course of the circulation, and infect distant parts. We have an experiment on the authority of Langenbeck, related in the *Encyclopédie Anatomique*, in which some fresh cancerous matter was injected into the veins of a dog, and cancerous tubercles were consequently developed in the animal’s lungs.

In like manner, I suppose, it might be possible under certain peculiar circumstances to infect the general system with cancer through the absorbent vessels ; but the fact that the glands first in order only are affected in consequence of local cancerous diseases,

forbids the idea that this is the way in which the disease is usually conveyed to other parts.

These observations will, I hope, prepare us to consider on sound physiological principles the change that is produced in the syphilitic poison during the passage of the matters in which it is contained through the lymphatic glands. These materials are themselves undergoing a change which will fit them for becoming part of the circulating fluid, and it would seem that the poison itself undergoes a change similar to that produced in the poison of the viper, or in the Woorara poison, by the stomach.

The difference in the nature of the fluid in the lymphatic vessels, before and after it has passed the inguinal glands, is then analogous to the difference in the qualities of the Woorara poison before and after it has undergone digestion in the stomach and the lacteals. In both cases do the fluid contents of the lymphatic vessels undergo a change fitting them to become a part of the circulating fluid ; in both cases are poisonous matters sometimes converted or assimilated, and sometimes rejected ; by vomiting in the case of the stomach, by suppuration in the case of the lymphatics.

In looking over my notes of cases which have presented themselves at this hospital within the last year or two,* I have collected together and arranged in a tabular form forty-nine consecutive cases of suppurating bubo. Of these, five only are recorded as having been accompanied, or followed, by any secondary af-

* This was written in 1854.

fection during the period that they remained under observation. In one of these five there was a distinct history of previous disease, both primary and secondary. In another, the cervical glands were enlarged, and the suppuration in the groin may, therefore, probably have been of a strumous character. In two cases, the secondary eruption was tubercular:—an affection most obstinate in its nature, very liable to recur after having once disappeared, and comparatively seldom occurring as the first symptom of cutaneous disease. These, then, I regard in all probability like the first of the five cases, as the result of some previous syphilitic infection. This analysis would thus leave only one case out of forty-nine in which a suppurating bubo was apparently even followed by secondary symptoms. In this exceptional case, the secondary eruption appeared a month after the occurrence of the bubo, and may, like the others, have depended upon previous disease.

On the other hand, I have collected and tabulated in the same way thirty-one consecutive cases of secondary syphilitic eruption. In one only of these cases does the history afford any mention of a suppurating bubo, and in that one case the history is not satisfactory upon the point. Had the notes of cases of other years been collected and tabulated in the same way, I do not doubt that they would have afforded similar results. Such facts appear to establish indisputably the proposition that the chances of the infection of the system in cases of syphilis are inversely in proportion to the degree of irritation and

inflammation of the absorbent vessels leading from the primary seat of disease. As this doctrine may probably appear to many to be contrary to the opinions usually entertained, I have thought it well for the satisfaction of others to collect some independent evidence on the point ; and for this purpose I have used the register of the Lock Hospital, which is kept by the house surgeons as they successively come into office. I find here recorded eighty consecutive cases of suppurating bubo. Of these, eleven are recorded as having had some other syphilitic affection besides the strictly primary disease during the time that they remained under observation. In four of these cases, this affection consisted in condylomata alone. In four, of a tubercular eruption, and in three of psoriasis. It is to be remarked, that here there is an entire absence of any mention of the presence of lichen, or lepra, affections of the most common occurrence, as first presenting themselves after infecting syphilitic sores. The condylomata, especially when they occur in female patients, are of such doubtful origin that they cannot be received as affording any evidence of the affection of the general system, as a consequence of the primary affections with which they are associated. Omitting, therefore, the cases in which they have been mentioned as occurring without any other symptom of constitutional disease, we have seventy-six consecutive cases of suppurating bubo from all causes, and in these mention is made of secondary affections in seven only.

The presence of secondary symptoms in this small proportion of cases may with justice be attributed to

the recurrence of previous disease, and not to the primary affection which caused the suppurating bubo. This view is materially supported by the kind of eruption observed. In four out of the seven instances the eruption was tubercular, agreeing in this respect with the results obtained from my own case books. The facts presented in both collections of cases, therefore, point to the conclusion, that, in the comparatively rare instances in which secondary syphilis is found in conjunction with a suppurating bubo, it depends upon the system having been infected independently of the disease which has given rise to that suppuration. The strongest proof, however, to my own mind of the truth of this doctrine, so full of practical value, is, that having directed my attention to the subject for a considerable time, and having called the attention of the pupils to it both at the Lock Hospital and at King's College Hospital, I have not been able hitherto to find a single unequivocal case in which a primary suppurating sore had clearly given rise to a suppurating bubo, and, at the same time, to constitutional syphilis.

Cases will occasionally present themselves, in which, at first sight, this has apparently occurred. But upon investigation they will be found to be instances in which the infecting form of syphilis has been complicated by some other affection ; such as the existence of previous constitutional disease, or the occurrence of a two-fold inoculation.

Physiological absorption. Hunter believed that the syphilitic poison might be simply absorbed by the

vessels of a part, without giving rise to any local affection ; and ever since his time there have been original observers who have held the same doctrine. Thus Mr. Lane, one of the present consulting surgeons of the Lock Hospital, has shown, by inoculation, that a bubo was of a specific character, when no primary lesion could be found upon the most minute examination ; and Dr. Marston, of the Royal Artillery, has lately recorded cases in the *Transactions of the Medical and Chirurgical Society*, in which constitutional syphilis occurred without any previous primary symptom. Satisfactory demonstration upon the point is extremely difficult. With regard to the existence of a suppurating bubo without any accompanying sore, it might be said that a sore had really existed before the occurrence of the bubo, and had healed before the examination took place ; and with regard to syphilitic infection, although it may be shown to occur without the existence of any chancre, as usually recognized, it would be extremely difficult to prove that the first or second form of primary syphilitic infection, described in Lecture II, had not existed in any individual case.

LECTURE V.

DESTRUCTIVE SYPHILITIC INFLAMMATION: ACTION OF
CAUSTICS: SERPIGINOUS SORES: TREATMENT OF
SUPPURATING SYPHILITIC SORES.

DESTRUCTIVE SYPHILITIC INFLAMMATION.

It is a very remarkable fact that some of the most vascular parts of the body, and those the best supplied with nerves, are, under certain circumstances, the most prone to mortification. The parts of generation, amply supplied with nerves and blood-vessels, will, under the influence of the syphilitic poison, occasionally become intensely inflamed, and that inflammation will speedily terminate in gangrene. If the gangrene so produced occurs within a short time after the application of the syphilitic poison, the death of the part involves the destruction of the poison. They together cease to exist; and, when the slough separates, an ordinary sore alone remains, requiring no specific treatment.

Mortification of some part of the organs of generation sometimes appears to depend upon a diseased state of the blood, independent of any local cause.

The blood will stagnate in the capillaries of the skin here as elsewhere ; and the tendency to mortification will first show itself in the most vascular parts. The skin will be affected before the areolar tissue, and the areolar tissue before the fibrous and membranous parts.

1. The mortification, which involves the whole of the infected tissues, will sometimes be of the dry kind, but generally it will be of the moist variety. In the first there will be little pain or swelling, but in the second there will be much effusion, with great pain and a considerable amount of constitutional disturbance. Both these varieties of mortification may occur where there is no evidence of the disease having arisen from the application of any poison ; and on the other hand, they will occasionally as evidently appear to depend upon direct contagion. Patients in apparent health will sometimes, within three or four days after exposure, find some part of the organs red, swollen, and extremely painful. In the centre of the inflamed part a dusky spot will indicate that the blood has already begun to stagnate in the vessels. The nutrition of the parts is no longer maintained ; irregular excavations are made by small portions of the tissues being thrown off in the sanious discharge. The whole part affected becomes of a darker hue, and ultimately presents the ordinary appearance of gangrene. After a time a line of demarcation is established, the slough is thrown off, and the wound generally cicatrizes without difficulty. This process, effected by nature, is very similar to that which is artificially produced

by the application of caustic to a syphilitic sore. In both cases, if the mortification has reached all the parts which have imbibed the poison, the destruction of the poison will take place in that of the tissues which contained it.

In this first practical division of mortification, viz. : that in which the whole of the infected tissues perishes, as it occurs naturally, there is very seldom indeed any subsequent affection of the patient's system, even supposing he has been in a position to contract an infecting sore ; and the reason of this doubtless is, that the action which terminates in mortification commences at the same time as, or very soon after, the application of the poison. In cases where the mortification has been artificially produced, on the contrary, a period of incubation may have existed, of some days or weeks, before the disease has shown itself, and consequently before the caustic is applied ; and during this time the tissues will have imbibed the poison, to a greater extent than the caustic can reach.

The morbid action, which we are now considering, appears to be communicable by contact, although this cannot be so closely traced as in the other forms of syphilitic inoculation. In patients, for instance, in whom the general health has not been impaired, parts which have no direct connexion, either by blood-vessels or nerves, will appear to infect each other. Thus the glans and the prepuce, the opposed surfaces of the labia or of the nates, will sometimes become affected in a similar manner and exactly to the same extent ; and

when lymphatic absorption accompanies the gangrenous inflammation, the destructive action is tolerably sure to be communicated from the primary sore to the corresponding inguinal gland, and from it to the surrounding areolar tissue and skin.

II. The second form of destructive inflammation is by far more common, and ordinarily of much longer duration. In it the infected tissue dies slowly, bit by bit, by a kind of molecular neerosis ; and, in consequence of this tardy action, the whole of the infecting portions never perish at the same time. A part is always left as a focus of contagion, and this involves fresh portions, which, in their turn, are thrown off, but not before they have communicated the disease to parts beyond. This action constitutes the *phagedænic* syphilitic sore. It may appear as an original disease, or it may supervene upon any of the forms already described. It is inoculable, and generally arises from the direct result of the application of the syphilitic poison ; but secondary forms of syphilitic disease may assume precisely the same characters. These, however, cannot readily be inoculated upon the patient, whereas the primary phagedænic ulcer can.*

The phagedænic ulcer spreads irregularly in different directions, is accompanied often by much pain, and yields a profuse discharge. This consists of an ill-

* The experiment of inoculating this form of disease should be carefully avoided ; for a surgeon can never tell when the artificial inoculation which he produces will heal, and he will have the credit of having prolonged the disease if the original sore should heal before the inoculation.

formed sanious pus, mixed up with the *débris* of organic tissues. It does not affect the inguinal glands, provided these have not become implicated before the phagedænic action has fairly set in ; if they have, the bubo will probably open and present the same phagedænic appearance as the original sore.

There is one form of the destructive syphilitic inflammation which presents very peculiar characters. Instead of spreading from one point in a more or less circular form, the disease may slowly extend in the form of portions of circles, from several points at once ; or, while the central portion first attacked heals, the affection will spread in a circular form, continually attacking fresh parts. The skin which is healed will then present a shining glazed appearance, surrounded by a dark-coloured circle of irregular so-called ulceration. This affection has been named the *serpiginous chancre*. Like every other form of chancre, it may be accurately simulated by a form of secondary disease, the capability of ready inoculation upon the patient who has it, alone excepted. This affection spreads by a true necrosis ; as one part heals, another becomes in succession red, livid, and disintegrated, the particles being thrown off in a thin sanious discharge. The loss of substance is occasioned entirely in this way, and not at all by the action of the absorbents. This form of destructive inflammation will sometimes continue for months, or even years ; occasionally nearly healing, and then again, without any apparent cause, spreading in the same peculiar manner. It affects the folds of the groin, the inside of the thighs and nates, perhaps more frequently than any other parts.

There is one kind of destructive inflammation which must be distinguished from the rest, to which, however, it sometimes to the eye bears a very strong resemblance. This is the destructive inflammation that occurs on the surface of an indurated chancre. It will occasionally happen that the effusion at the base of an infecting sore is sufficient to interfere with the due circulation of the part; a superficial layer of tissue may consequently perish, and the indurated chancre will then present the same appearance for a short time as a soft phagedænic sore. This must be regarded as an accidental complication only, and not as a variety of the true phagedænic ulceration.

Treatment of destructive syphilitic inflammation.
In the treatment of the acute form of destructive inflammation, it must be remembered, that the action which is taking place may save the patient's system from syphilitic infection. It would not, therefore, be advisable to prevent that action entirely, even if we had the power of doing so. The object of treatment is to restrain it within due limits. For this purpose, fomentations and poultices are generally sufficient as local applications. Leeches in considerable numbers have been recommended, but the ultimate benefit derived from them is doubtful; and the leech-bites often give rise to troublesome sores. Large and repeated doses of opium are the best constitutional treatment; but it may be useful at the same time occasionally to give a brisk purgative.

The second form of destructive inflammation is that with which we have generally to do. If there is pain,

opium here again, administered internally and applied locally, is a very valuable medicine.

For the phagedænic form of ulceration without pain, a solution of the potassio-tartrate of iron, in the proportion of ten grains to an ounce of water, is perhaps the most efficacious application. The same medicine may be administered internally, in five or six grain doses, three times a day. The nitric-acid lotion is also very often employed in phagedænic sores. This may be used in the proportion of two or three minims of the strong acid, to an ounce of water. The seriginous sores occasionally defy all treatment. They will sometimes heal after the destruction of the whole of the eroded surface with caustic; but most frequently after being destroyed they will appear to be healing for a time, and then suddenly extend to the same dimensions as before. Within the last two or three years, some cases have presented themselves at the Lock Hospital, which have yielded speedily and permanently to local calomel-fumigation. It is sometimes difficult to say whether a phagedænic sore should be regarded as a primary or as a secondary syphilitic affection. The local calomel-fumigation may then be tried, and if that does not succeed, the general fumigation of the whole body may be employed. One or other of these modes of treatment will relieve most intractable ulcerations of a syphilitic origin.

But it will occasionally happen, especially with regard to seriginous ulcers, that they will defy all treatment. These cases occur in persons who have been accustomed to drink, and who have had constitutional

syphilis. Independently of the effect of the patient's constitution, there appears to be something peculiar in the poison derived from a serpiginous sore. This is proved by the different effects it produces, as compared with the results of the inoculation of the secretion from any ordinary suppurating sore, even when the comparative experiment is made on the same body.

A case has lately presented itself to me in the Lock Hospital, where, from peculiar circumstances, I had an opportunity of trying the effect of the inoculation of the secretions from different kinds of syphilitic sores, primary and secondary, upon the same patient. The different series of inoculations were therefore carried on under precisely the same circumstances, and some of them at exactly the same time. The differences, which were marked in the strongest possible manner, were therefore entirely due to the difference in the nature of the secretions inoculated.

Some of the secretion from a well-developed primary indurated sore, of from two to three weeks duration, and containing no pus-globules, was taken upon two little points of bone, such as are used for the purpose of ordinary vaccination. The cuticle having been pierced by a lancet, the points of bone, charged with the secretion from the primary infecting sore, were introduced beneath it, and allowed to remain several hours. A kind of abortive pustule was produced in each situation. The secretion from this was again inoculated on the third day, and produced a small spot or pimple. Beyond this no result could be produced by any further inoculation from this source.

The appearances of the first inoculations on the twelfth day, and of those second in order on the tenth day, are shown in Plate v, figs. 8 and 9, which are copied from drawings by Dr. Westmacott.

Some of the secretion was taken from a highly inflamed mucous tubercle, which accompanied and formed part of a set of secondary symptoms which had appeared for the first time in another patient. This secretion was inoculated in the same way with the ivory or bone points, and the results were very similar to those produced by the inoculation of the secretion of the primary indurated sore. A kind of pustule was produced by the first inoculations, the pustular character depending probably in part upon the irritation produced by the prolonged contact of the bony points. The secretion from these first inoculations was again inoculated in the ordinary way with the lancet in two places, and two small, livid spots or pimples alone were produced. As much fluid as could be obtained from these was again inoculated, and similar spots or pimples were produced. After this no inoculable secretion could be obtained from any of this series.

The drawings in Plate iv, marked 6, 7, and 8, represent this series of inoculations on the twelfth, the eighth, and the fifth day respectively; and Nos. 9, 10, and 11 represent the same series on the twenty-fourth, twentieth, and seventeenth day respectively. After this the appearances gradually faded away, and no further results have appeared from any of the foregoing inoculations.

Had these inoculations been performed on a patient who had never had constitutional syphilis, an indurated and infecting sore would, after a certain period of incubation, in all probability, have followed ; and I take for granted that the reason why such modified results only were obtained was that the syphilitic poison had, on a former occasion, produced its full effect upon this patient's system. As it was, the secretion from the primary indurated sore produced an affection which could be again inoculated a second time only, and the secretion from the inflamed mucous tubercles produced an affection which could be reinoculated a third time only. After this, the appearances of the inoculations in both cases gradually died away.

In strong contrast to these results are the effects produced by the inoculation of the secretion of a mixed (indurated *and* suppurating) sore, and from the patient's own serpiginous sores.

As the previously mentioned inoculations had shown that this patient was susceptible to only a very slight and modified effect from the secretion of a primary infecting sore, the results now described must have been from suppurating action superinduced upon the adhesive in the patient from whom the inoculated matter was taken.

Some secretion received on the point of a lancet was inoculated at two points in the ordinary way. On the third day an incipient pustule (Plate IV, fig. 4) surrounded by a red areola, had appeared in each situation. These were allowed to run their course, and became superficial suppurating sores, of the size of a

fourpenny piece. Their appearance is represented on the twelfth day (Plate v, fig. 5). Some pus from their surface, taken as soon as fully formed, was reinoculated, and produced exactly similar superficial suppurating sores (represented in Plate v, fig. 6). The inoculation, third in order, is also represented on the third day (Plate v, fig. 7); as compared with the first inoculation in this series, at the same period (Plate v, fig. 4), it appears to be quite as fully developed, and to be surrounded by as distinct an areola. The inoculations from this source were carried on through seven series, an ordinary suppurating sore being produced without fail, on each inoculated point.

In the last series of inoculations to be noticed, the secretion was from the patient's own very irritable and serpiginous sores. Upon each inoculated point a very well-developed and fully formed pustule appeared within the first few days. These pustules were depressed in their centres, and when they broke left exceedingly irritable ulcers. These ulcers were extremely painful, and surrounded a deep red margin. A series of three sets of inoculations were performed, and the poison appeared quite as active and virulent at last as at first. Plate v, fig. 1, represents the first inoculation which was made, on the sixty-second day of its progress; Plate v, fig. 2, the exceedingly well-developed pustules resulting from the inoculations second in order, on the eighth day of their existence; and Plate v, fig. 3, the circular, irritable sores that were left after the inoculations third in order, on the twenty-first day of their progress.

Considering that this patient had had his serpiginous sores for a period of between five and six years, and that, in spreading from one part to another, fresh portions of skin were constantly being inoculated, it might have been supposed that something like an immunity to further inoculation would by that time have been acquired. It is true this patient was syphilized, in the proper sense of the word, and, from some previous infection of his system, was not susceptible to the effects of inoculation, either from a primary induced, or from secondary sores, except in a very modified manner; but it is equally clear that the long and continuous course of self-inoculation to which he had been subject had not rendered him insusceptible of inoculation from either the ordinary suppurating sore, or from the more virulent poison secreted by his own ulcers.

In this case, then, we see that under the very same circumstances and upon the same individual the inoculation of the secretion from a serpiginous sore was followed by a much more painful and intractable disease than the ordinary forms of syphilitic inoculation. The artificial serpiginous sores remained open for five months. The original serpiginous sore at length healed, after having been open for a period of seven years. The last application used was a solution of sulphate of copper and opium.

TREATMENT OF SUPPURATING SYPHILITIC SORES.

The syphilitic poison requires a living nidus for its development, and a certain period must elapse before

its specific action can take place. If within the first five days of the application of the poison, the part to which it is applied be destroyed by caustic, the death of that part will determine the cessation of the morbid action. This cauterization, to be effective, must, however, extend to all the tissues which have imbibed the poison. It can, therefore, only be practised with success in the case of those chancres which appear within a very few days of the application of the poison. If a period of incubation have taken place, the tissues will so have imbibed the poison, that it will be in vain to attempt to destroy all the parts that have been infected.

Suppurating sores generally make their appearance immediately upon the application of the poison ; and to these, therefore, the method of treatment by cauterization is admirably adapted. For the purpose of securing the intended result, strong caustics should be used ; and as these may sometimes extend further than is intended, it is always advisable, before applying the caustic, to have an antidote at hand, so as to limit its action when desirable. When the caustic has produced its requisite action, the antidote may be applied ; this will have the effect of preventing the further extension of the caustic, and also relieve the pain to which it gives rise. Thus, if a strong acid be used, a solution of carbonate of potash, or chalk, will form a good antidote. If an alkaline caustic be employed, some vinegar may very conveniently be used to limit its action. When nitrate of silver is applied, the common olive oil is the best subsequent application.

The caustics most used for the purpose of destroying the suppurating syphilitic sores are the mineral acids, or a combination of potash and lime. The nitrate of silver will seldom extend sufficiently deep to eradicate the disease.

The strong nitric acid has often been employed, and acts extremely well ; but it gives very considerable pain when applied to the surface of the body.

Another preparation which has been very much used is a combination of sulphuric acid and powdered vegetable charcoal. According to M. Ricord, when this preparation, in the form of a paste, is applied to a chancre, it dries quickly, and forms a kind of black crust, which remains adherent to the tissues, combines with them, and is not detached for several days. The wound will then be found to have lost its specific qualities and to be in a healing condition. The application of this caustic causes very severe pain, which lasts for a considerable period. The pain, however, is said to be less than that produced by the nitric acid ; but then it does not admit of being relieved in the same way by the application of an antidote.

Perhaps the most convenient form of caustic is the potassa cum calce, as prepared in the shape of little rods for the purpose. The lime combines with the moisture of the parts, and prevents this from extending itself over the neighbouring surface. The extent to which this caustic acts may therefore be regulated in the most accurate manner ; and after it has done its duty, the application of some dilute acid will relieve the pain which it has caused.

The actual cautery is a remedy which has often been successfully used for the phagedænic form of ulceration. The object with this as with the other kinds of caustic, is to destroy the whole of the infected tissue, and *completely* to kill every part to which the cauterizing action extends. For this purpose the cautery should be heated to a white heat, and allowed to remain on the diseased part sufficiently long to destroy the tissues to the requisite depth. Phagedænic sores treated in this way have been known subsequently to present a healthy surface, and to heal without further trouble.

Serpiginous sores are often too extensive to be conveniently treated in this way. A modification of the plan may then be adopted. The outer edge of the sore may be alone destroyed, so that the diseased part may be completely surrounded by an artificial line of demarcation. This will sometimes prevent the extension of the disease. It will often happen that the edges of serpiginous sores are undermined, and if the cautery be then applied to the edges alone of the skin, it may not reach to the circumference of the disease. It is safe, under such circumstances, to destroy the skin deeply two or three lines from its detached margin.

The ordinary suppurating syphilitic sore, if not in its origin destroyed by caustic, will generally run its course of five or six weeks duration, and heal of its own accord, without leaving any injurious effects either in the lymphatic or in the patient's general system.

It may be well, however, to use various means to

accelerate the healing of a suppurating sore, and such means are sometimes absolutely necessary.

So long as the sore has the specific characters of ulcerating deeply, with clearly defined vertical edges, it is well to continue the use of some mild caustic, such as a solution of nitrate of silver. When granulations spring up and the base appears healthy, it matters little what applications be used, provided the part be kept scrupulously clean.

The ulcer may assume the characters and appearances of similar lesions elsewhere situated; *e. g.*, it may be indolent, irritable, or inflamed, or, by granulating too redundantly, impede the cicatrization. Such symptoms are to be met by the same measures as would ordinarily be used.

If the chaneres threaten sloughing, it is best to dry the parts and apply nitric acid; afterwards using a lotion of potassio-tartrate of iron.

With a solution of that salt applied to the sore, and the administration of the same drug internally, the phagedænic action will almost always alter its character.

Sometimes a large amount of inflammation, with great pain, attends the local progress of the disease. In such cases, the administration of morphia in liq. ammoniæ acētatis is highly beneficial. *Of the buboes* which attend and accompany these chaneres, two varieties may be mentioned. The progress of the first we can hope to arrest, while that of the latter will surely go on.

First. An inflammation of the lymphatics, such as

often occurs after abrasions or wounds of other parts, may arise. The nearest inguinal gland may enlarge, and the textures seated upon it may inflame, without there being any specific material in the gland tissue itself. If an abscess form, it is a simple abscess, and the ulcerated surface does not become a chancre, affording incoercible discharge.

Second. When lymphatic absorption occurs, there is a transmission and lodgement of a chancreous virus in the part. An abscess will then ensue, and the resulting ulcer will oftentimes be but a repetition of the chancreous process, and to be treated, therefore, in a similar manner to the chancre.

When we have no means of deciding to which division the symptoms in the lymphatics are to be referred, it is well to try—by a few leeches, perfect rest, hot or cold applications, pressure, and the applications of vesicants—to prevent suppuration. Of the latter, the best are : the vesicant action by a strong solution of iodine, or painting the integument with a strong solution of nitrate of silver, dissolved with the aid of a little nitric acid, as suggested by Mr. Henry Thompson. As soon as the effect of these remedies has subsided, pressure may be employed if the parts are still enlarged.

Should these plans fail in discussing the tumour, it is better to allow the patient to get up and walk about in the air.

Suppuration having set in, shall we open by multiple and small incisions, or by a depending one, involving the whole length of the swelling ? The former course

--with or without the use of stimulating injections-- has proved very uncertain in its results ; a free opening is generally to be preferred. The wound may then be dressed with strips of lint, from the bottom.

If the integument be thin and undermined, the action indolent, and the skin a dull red colour, opening the abscess, by means of a liberal application of potassa fusa, will be found to expedite considerably the subsequent healing.

When the abscess has been laid open, it will be often found that a large indolently inflamed gland appears at the bottom. Between such gland and the opposed textures no union will generally ensue, and nothing is more common than to be able to pass a probe around the circumference of such gland. Matter is apt to lodge in these intervals, inflammation and burrowing to ensue, with the formation of sinuses.

Nothing can be more troublesome to cure than such buboes ; and by far the shortest course is to destroy the gland by caustics, or to put the patient under chloroform, incise the gland, and detach it with the handle of the knife or fingers, subsequently stuffing the wound with lint.

As the last may appear a severe plan of treatment, it may be well to try first the effect of repeated applications of nitrate of silver or the red oxide of mercury, by which the gland tissue is gradually destroyed, and contraction of the walls of the abscess sometimes ensues.

Sinuses, here as elsewhere, must be laid open ; for it is very rarely that these heal by the injection of

astringent and stimulating injections. Of course, however, the effect of these can be tried before proceeding to the incisions.

When a sinus runs perpendicularly downwards—*i. e.*, at right angles to the surface of the body—it cannot be laid open. An enlarged and inflamed gland will be found occupying the base of the sinus, and preventing its healing. By applying caustic to this, and stuffing the part with lint, it may generally be made to heal from below. So soon as there is a healthy granulating foundation, the sinus will begin to be filled up. If the process becomes chronic, it is a good plan to pass a narrow bistoury to the bottom, and incise the walls of the sinus, applying pressure afterwards.

During the whole treatment, the patient should live well, take as much air and exercise as he well can, and steel with tonics are generally indicated.

LOCAL TREATMENT OF PRIMARY SPECIFIC INFLAMMATION.

Regarding the primary adhesive inflammation as the portal through which the syphilitic disease enters a patient's constitution, the first question which naturally arises is, whether the poison may not be destroyed in embryo by caustic, while the disease is as yet local. The writings of many authors would lead to the belief that this might generally be accomplished, provided the patients came sufficiently early under observation. If the results of the application of the syphilitic poison were always immediately developed, and if the affection produced by it always ran a definite course, ter-

minating as has been so often described in the specific pustule, nothing would appear more easy and simple than at once to destroy the disease. But it has already been shown (Lecture II), that the description of the development of the suppurating sore does not apply to the infecting chancre ; a period of incubation may here exist, lasting over days or weeks, and during this time there is no means of knowing what part will ultimately be proved to have received the poison. There is, therefore, in such a case, no possible means of judging where the caustic should be applied. At the end of this period, if the caustic be applied immediately the disease appears, it will not prevent its progress. The poison has lain dormant for a certain period, and has been imbibed by the surrounding tissues. The destruction of a small portion of these will not prevent the development of the morbid action in the remainder. In cases, however, where the results of syphilitic inoculation have appeared shortly after the application of the poison, the application of caustic furnishes a most efficient remedy against the further progress of the disease. The destruction of the tissue involves that of the poison which it contains. The experience of Sigmund of Vienna coincides with that of Ricord and other observers in establishing the fact, that if a part to which the syphilitic virus has been applied be destroyed by caustic within the first four days, no constitutional symptoms will follow ; but inasmuch as the characters of the infecting sore very seldom declare themselves within this period, the

remedy is one which cannot be said to be applicable to these cases.

The indurated chancre does not ordinarily produce much inconvenience, and were it not for its consequences, would require little attention. It is true, indeed, that an indurated sore will sometimes become intractable, and be followed by a troublesome ulceration; but this occurs in general only where the patient's system has been infected with the poison, and where the local symptoms are a part of the secondary disease.

The object of treatment in the primary specific adhesive inflammation is to get rid of the induration; so long as this remains, the patient is never safe from its consequences.

Excision of an indurated part has sometimes been practised; but, as in the case of the application of caustic when the disease has declared itself, the remedy is too late. The cut edges of the wound always take on the specific action, but this induration is probably not so persistent as that of the part originally infected; so that, although there can be no reasonable expectation of cutting short the disease by this mode of treatment, the patients ultimately appear to do better than where the original adhesive inflammation is left to run its course.

The best local application is some form of mercury. The common mercurial ointment may be applied, spread upon lint; or calomel, combined with mucilage and lime-water, may be used in the form of a lotion;

or the surface of the part may be dusted with calomel-powder.

In cases where it is an object to cure a primary ulceration quickly, perhaps the best application is calomel fumigation locally applied. As this remedy is efficacious in various other forms of syphilitic disease, its mode of application will be described separately.

LECTURE VI.

TRANSMISSION OF SYPHILIS BY VACCINATION.

WHENEVER a popular opinion continues for any length of time, and is widely spread amongst a community, it will be found to have had its origin in some truth or other, however much that truth may ultimately have become distorted. The only way of disabusing the public mind of any errors which may thus have been grafted upon real observation, is to state clearly and plainly the facts upon which the theory has been based. Every one then can form his own opinion, and reassure his own mind with regard to any extravagant fears or superstitions which may have been entertained.

The discovery of our immortal countryman, Jenner, with regard to vaccination, cannot be overrated ; but much as it has accomplished, and much as it has conduced to the welfare of mankind, it would have accomplished still more, if any incidental disadvantages attending its use, had from the first been clearly and distinctly known. All medical men would then have been in a position to declare to their patients, with one voice, that vaccination was safe when such and such precautions were used ; and the public would ere this

have ascertained by experience that, under the conditions laid down, they had nothing to fear either for themselves or for their children.

Such a result from the discovery of Jenner, however much it might have been desired, has not as yet been realized. In whole districts in some of the midland counties of England, the poor steadily refuse to have their children vaccinated in spite, even, of a compulsory Act of Parliament. The children are thus deprived of the benefit which they might have derived from the greatest medical discovery which has ever been made. If these poor people understood that the dangers attending vaccination were well known and guarded against, they would implicitly trust their medical advisers in this, as they so unreservedly do in every other, medical question. It is the undefined impression that something wrong may happen which produces the want of confidence with regard to this particular point. A known evil would be met at once. It is the fact, practically believed amongst the poor, that an evil may arise without their medical advisers being able to tell whence it comes, that produces so much alarm.

Nor is this vague dread—of something besides the pure vaccine virus being communicated by vaccination—confined by any means to those who are uneducated. Amongst the upper classes the same fear of some unknown evil exists; and in every class of the community we occasionally hear it said, “The child has never been well since it was vaccinated;” while no distinct impression is either entertained or conveyed as to

what was wrong with regard to that operation. Even medical men have, as a profession, joined in some undefined belief of the possibility of an impure contagion in the act of vaccination, at least if we may judge by the reiterated cautions which we hear upon every side with regard to the mode of performing the operation, even from those who deny the possibility of the communication of any specific disease.

But in laying open the whole truth we are bound to go further, and to say that not only have a large proportion of medical practitioners joined in the popular notion of some undefined but impure action being occasionally induced by vaccination, but many from practical observation (and we may be well assured most unwillingly) have not scrupled to record their belief that another distinct disease besides the cow-pox has sometimes been communicated by vaccination, and that that disease is syphilis.

In a paper published in the *Medical and Chirurgical Transactions* for the year 1861, I have collected together the opinions of some medical men of eminence who have thus expressed their convictions:—

Mr. Ackerly, of Liverpool, writes, “I have no doubt that syphilis has been communicated from a diseased to a healthy child by means of vaccination.”

Dr. Bamberger, of Würzburg, says, “I am indeed convinced that contagious disease—syphilis for instance—is communicable with the lymph in vaccination; nay, such a case has even happened a short time ago in a town but a few miles from this place. After due inquiry into all the circumstances of the case, the

practitioner was found guilty by the court of justice, and condemned to prison for several months."

Mr. Barber, of Stamford, says, "It is very possible that a minute quantity of blood may become mixed with the lymph, and we know not how small a quantity of blood may suffice to convey a constitutional, or other taint."

Mr. Complin says, "Syphilis, I consider, might be communicated."

Mr. Douglas, of Bradford, says, "Twenty-five years' observation and experience lead me to conclude that the greatest care ought to be taken."

Dr. Lever, of Guy's Hospital, says, "I have known syphilis communicated to a child by the hand of a supposed, but legally educated, medical practitioner."

Mr. Startin is of opinion that the true Jennerian vesicle, in a subject suffering under constitutional or acquired syphilis, may be the means of transmitting this disease, "which," he says, "he has many times seen transferred from such a vesicle."

Dr. Whitehead, of Manchester, mentions that he has "seen several instances of the transference of the syphilitic taint through the medium of vaccination." He believes that the inoculation of matter taken from a syphilitic sore, in any of its stages, is capable of producing its characteristic phenomena in the inoculated.

Now it must be remembered that these opinions were collected at a time when the doctrines of Ricord (as to the effects of syphilitic inoculation appearing immediately after the application of the poison) were well-nigh universally received. At that period, if no

results showed themselves at the expiration of the first week, none other were considered possible. The popular belief then prevailing among medical men is well expressed by the published answer of Mr. de Méric, who says, "I do not believe that secondary symptoms can be transmitted by inoculation; hence (if I am right in holding Hunter's* and Ricord's opinion on this non-transmissibility) *it is impossible* to convey syphilis by vaccination, except the lancet have come in contact with pus secreted by a *primary ulcer*."

We have now been taught by clinical observation, and also by direct experiment, that the form of syphilis which infects a patient's constitution has usually a period of incubation of some weeks before its effects develop themselves. And inasmuch as it is this form of syphilis alone which is likely to be communicated by vaccination (and which alone would be of much consequence if it were so communicated), a fresh series of observations, aided by the additional light recently obtained, are required before the questions propounded can be considered as satisfactorily answered.

Aided by recent investigations, Dr. Viennois, in his thesis presented to the Faculty of Medicine in Paris in the year 1860, and also in the *Archives of Medicine* for the same year, has collected together and given a detailed account of some cases in which an

* "The conclusion that Hunter drew from his experiments was, the secretions from secondary syphilitic infection were not inoculable *on the same body*."

infecting syphilitic sore, or more properly speaking, the specific adhesive inflammation, followed vaccination. Dr. Viennois has carefully excluded those cases in which a fresh set of symptoms followed vaccination in patients who had previously had hereditary or acquired syphilis, and has confined himself to cases in which the primary affections could be clearly verified, and their effects upon the constitutions of the patients satisfactorily traced. Dr. Viennois' investigations have led him to the belief that, if the lymph from a vaccine vesicle be alone inoculated, the cow-pox alone will be produced ; but that if, in addition to this, the blood of a person affected with constitutional syphilis be inoculated at the same time, then that syphilis may also be communicated. The cow-pox would then appear first, as having a shorter period of incubation ; and after a time the syphilitic tubercle (or primary specific inflammation) would make its appearance upon the inoculated part, and would in due course be followed by secondary symptoms. The cases which Dr. Viennois has collected are related with so many circumstantial details, that, if correctly reported, they cannot fail of themselves to establish the fact that the poison of syphilis, and that of the cow-pox, may be communicated, and sometimes have been communicated, at the same time.

In spite, however, of the testimony of the gentlemen above quoted, the great mass of the profession in England still believe that syphilis cannot be communicated by vaccination ; and they base their belief on the fact, that after very large numbers of cases they

have never seen any such results follow. But here it must in justice be asked, how long have vaccinators been in the habit of watching their patients after vaccination? It is well known that the certificate of successful vaccination is generally given at the expiration of a week, and after that, the vaccinator, as a rule, sees no more of his patient. If any disease were to show itself after this period, or at the natural time at which syphilitic infection usually shows itself, the vaccinator would probably see nothing of it; or if he did see it, and happened to hold the erroneous but popular belief that syphilitic inoculation appeared immediately after the application of the poison, he would naturally attribute the symptoms to some other cause.

It has already been shown (Lecture II) that syphilitic infection occasionally appears under different forms, and that ulceration is no essential part of that action. In some cases the induration, also, is very slight. A boy came under my care for a circumscribed, well-defined induration on the prepuce. This was not larger in circumference than a No. 8 bougie, and did not exceed a wafer in thickness. It was covered with a thin scale of thickened cuticle, and did not ulcerate. After the lapse of a few weeks this patient had a mild but well-marked eruption of syphilitic lepra on the body. The spots of the secondary affection very much resembled the primary disease, and had any one seen the patient then for the first time (after the secondary symptoms had manifested themselves) he might easily have supposed that the

spot on the prepuce was a part of the secondary eruption. In such a case the primary disease is very likely to be overlooked.

In the above-mentioned case, had the slight primary induration occurred in any other part it would probably have attracted no attention, and the case might have been recorded as one in which syphilitic infection had taken place without any primary disease.

Now exactly in the same way, unless medical men are prepared to recognize the distinctive characters of syphilitic infection, may the primary disease be readily overlooked when it succeeds to vaccination.

Again, if the vaccine vesicle has been long in healing, if it has been attended with any accidental inflammation, the real characters of the syphilitic inoculation may be masked. We have already seen that this may occur in the strictly twofold syphilitic inoculation. The suppurating syphilitic action may so far mask the real infection that the characters of the latter may occasionally pass unrecognized.

The negative evidences of those who were prepared to see syphilitic inoculation, if it really existed, declare itself by a pus-secreting ulcer, and without any period of incubation, is not then to be weighed against even a small amount of well-authenticated positive testimony. Still, in spite of all that has been said and written on the subject, both the profession and the public have been left in doubt and anxiety—a suspense more painful in its nature and more injurious in its consequences, than any well-ascertained facts could possibly be. During this period of doubt and sus-

pense, two most remarkable circumstances have taken place. One of these is an artificial inoculation performed at the Hôtel Dieu ; and the other the transmission of a disease, both by artificial inoculation and by natural means, to a large number of children, and to several adults at Rivalta in Piedmont. These circumstances have occurred at the exact time in the history of syphilitic inoculation best calculated to dissipate the doubts which still hang over so many minds, and the symptoms which they present will, if fairly interpreted, satisfy every unprejudiced inquirer. The first of these remarkable facts occurred in a woman eighteen years of age, who was admitted into the Hôtel Dieu, under M. Trousseau, on the 6th of September last. This woman was vaccinated while in the hospital, in the beginning of October. The day after the vaccination the punctures were prominent, and surrounded by a slight inflammatory areola, with intense itching. Four or five days afterwards there were no longer any traces of the inoculation. This excited no surprise at the time, as the patient had previously been properly vaccinated. The patient left the hospital on the 9th of November. In the beginning of December, two ulcers, covered with thick scabs, were seen on the inoculated spots. These ulcerations were at first considered to be vaccine vesicles abnormally developed, with an unusually prolonged period of incubation. On the 11th of January 1862, upwards of three months from the date of the vaccination, this patient was re-admitted into the Hôtel Dieu. At this period the ulcerations on the arm were still unhealed ;

the corresponding arm-pit was the seat of multiple indolent bubo ; and on the body, the arms, and the chin, was a syphilitic roseola, concerning the nature of which no one has hitherto expressed any doubt. The patient reported that this eruption had existed from the middle of December. It was followed by pains in the head, and indolent enlargement of the post-cervical glands.

M. Ricord now examines the patient at M. Trousseau's invitation, and reports that she is the subject of two indurated chancres on the left arm ; that she has multiple enlargement of the glands in the axilla ; and that she has specific roseola, typical of constitutional syphilis. This constitutional affection he moreover declares to have had its origin, its entrance into the patient's system, through the ulcerations on the left arm.

Such is the admission of this great master of his art. But in spite of this, many of his pupils, not endowed with the same spirit of candour as their master, still maintain that it is *impossible* that syphilis can thus have been communicated by the simple act of vaccination.* The facts themselves, indeed, no one attempts to deny ; but they are explained away on the supposition that this patient may have accidentally had some syphilitic matter from a primary sore brought in

* It is only just to say that Mr. de Mérie, and many other distinguished writers, who formerly held the opinion of the impossibility of the transmission of syphilis by vaccination, have lately materially modified their opinions upon this point.

contact with her arm after the vaccination. Let us examine this reasoning : and here we shall find the advantage of the accurate diagnosis between the two principal kinds of syphilitic action insisted upon in the preceding lectures. It is admitted that syphilitic infection, like vaccination, produces its peculiar action upon a patient's system generally once only in the course of a life. The action communicated to this patient was evidently of the infecting character, and was not the local suppurating sore. In order, then, to maintain the proposed explanation, it is necessary to suppose that some of the secretion from a patient, which could be furnished at one particular time only of his or her life, should have been brought in contact with the inoculations made in this woman's arm, within the first three or four days of those inoculations being made. After this period the punctures were healed ; and all observers agree that there is very little chance indeed of inoculation when syphilitic matter is placed upon a sound portion of the cuticle. We should have, therefore, to suppose that the secretion from a primary sore, which a patient would have once only during his life, was brought in contact with this patient's arm immediately after the puncture was made by the lancet in vaccination. If such a mode of reasoning were allowed, why might we not, in like manner, believe that in any one of the children who were vaccinated at the same time as this patient, the vesicle which appeared on its arm was due to the accidental contact of some vaccine lymph (which might have got upon some old rags in the ward), and not to the matter con-

veyed on the point of the lancet? Such a supposition is not more unphilosophical than that of regarding the results of the inoculation in the young woman (occurring, as they did, upon the precise point punctured, and after the natural period of incubation of this particular form of disease) as the results of some accidental inoculation, and not as arising from the punctures artificially made.

It may be said, that although syphilitic infection occurs once only, in general, during a patient's life, the results of that infection may continue for an unlimited period, and thus be the means of subsequently communicating the disease; and that such an assumption would render it less unlikely that this young woman had been infected in some other way than by the intended vaccination. But such a theory would at once admit the whole matter in dispute—viz., the possibility of the inoculation of the secretion from secondary symptoms, or of the fluids from a syphilitic person, so as to reproduce syphilis, together with, or instead of, the proper vaccine disease.

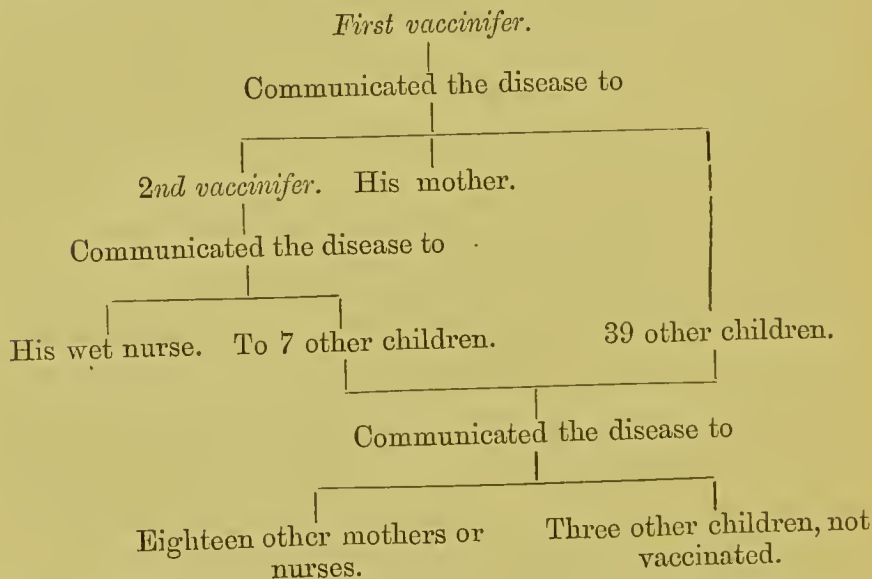
But a much more startling series of facts have recently been brought to light by the sad tragedy lately enacted at Rivalta. Here a child, named Chiabrera, was vaccinated; from him another child, named Mazone, was vaccinated; with forty-five other children. Chiabrera we shall call the first vaccinifer, and Mazone the second vaccinifer:—

A disease was conveyed from the first vaccinifer to thirty-nine children; from the second vaccinifer to seven children. Both vaccinifers were very ill, and

one died three months after vaccination. The first vaccinifer communicated the disease to his mother ; the second to his wet-nurse. Twenty nurses or mothers are known, up to the present time, to have been similarly affected. In three cases the same disease was again communicated from the mothers to their husbands ; and in three other cases the disease was communicated to other, previously healthy, children.

What this disease was, and how far in its course and symptoms it resembled the infecting variety of syphilis, we shall see in the next lecture.

The annexed diagram furnishes a view of the progress of this terrible malady, previously (as would appear) unknown at Rivalta, a village containing not more than two thousand inhabitants :—



LECTURE VII.

VACCINO-SYPHILITIC INOCULATION.

“The fear of unknown evils is a disease of the mind. It flies from the shadow, and creates more danger than it avoids. It weakens the judgment, and betrays the succours of reason. It is hard to fear and not to err.”

“There is this good in real evils; they deliver us from the petty despotism of those that are imaginary.”

VACCINATION is often followed by a rash upon the skin, even in the most healthy children, and it undoubtedly has a tendency to call into activity any latent affection which would naturally produce a cutaneous eruption. In cases of hereditary syphilis, vaccination will often determine the appearance of an eruption which, left to itself, would have become developed after a short interval; or, in cases where the syphilitic eruption has already appeared, vaccination will not unfrequently cause its recurrence. In such instances medical men are often unjustly accused of having caused the disease, and the parents of the child are but too glad to lay the blame on the vaccination. It becomes, then, most important, both for the protection of medical men, and also for the welfare of their patients, that it should be known what diseases, if any, can be conveyed by vaccination; what the

symptoms are by which those diseases can be recognized ; and what are the conditions under which they are liable to be communicated.

Some definite conclusions upon these points would dissipate unfounded apprehensions, would often prevent most unjust accusations, and would enable the surgeon to appeal conclusively to the symptoms, as in other diseases, to settle any controverted point.

With these objects in view, we proceed with the analysis of the table furnished in the previous lecture.

It may be well to state, that the facts from which the following summary is deduced are contained in a work by Dr. Pacchiotti, Professor of Pathology and Clinical Surgery at Turin, entitled *Sifilide trasmessa per Mezzo della Vaccinazione in Rivalta, presso Aqui*. A notice of the same facts is also published in some letters by the same author, and by M. Cerise in the *Union Médicale* for Nov. 9th and Nov. 30th, 1861, and for the 20th of February, 1862. Dr. Pacchiotti was a disciple of Ricord, and we may be sure not disposed to receive hastily any facts which were opposed to the doctrines of his illustrious teacher ; in fact, as he tells us, he for a long time struggled with his pre-conceived convictions until the facts which gradually unfolded themselves before his eyes were no longer to be gainsaid. The facts themselves which he has recorded were verified by himself in conjunction with five other medical men, who formed a Commission on purpose to inquire into the circumstances of this extraordinary occurrence.

In nearly all the cases, accurately observed, the

disease commenced with an indurated ulcer, which Dr. Pacchiotti and the medical men associated with him regarded as the same as the infecting chancre of Ricord. This was accompanied by multiple indolent bubo. To this rule there were some apparent exceptions.

In the vaccinated children these ulcers replaced the vaccine vesicle. In the mothers and nurses, ulcerations formed on the breast, followed or accompanied by multiple enlargement of the axillary glands. Three husbands who were infected had ulcers on the penis, with multiple enlargement of the inguinal glands. A girl, twelve years of age, who habitually carried her little sister, had a chancre on her arm, followed by secondary symptoms. The little sister—one of those who had been vaccinated—had a sore on her thigh, and is since dead.

The secondary symptoms observed and described by the gentlemen who formed the Commission were—mucous tubercles around the anus, on the genitals, and on the lips; ulcerations on the tonsils, on the tongue, and on the nose; different forms of syphilitic cutaneous eruption; loss of hair; impetigo; enlargement of the post-cervical glands; cachexia; marasmus. These symptoms were observed in different degrees by the six gentlemen who formed the Commission in forty-six children out of the total number (sixty-three) who were vaccinated. The children were all previously healthy, and these symptoms appeared in the whole of the cases, within four months. Can anyone accustomed to medical observation doubt that some

terrible disease had been communicated to these children, and from them to their nurses and mothers, and from the latter again to their husbands?

How shall we deal with these facts, a detailed account of which is given in the works above mentioned? Shall we pass them over in silence, and ignore that such an occurrence ever took place? Surely such a course would scarcely be worthy a country in which vaccination took its rise, or become a profession to whom the public look for advice in sanitary matters. The facts themselves must be known, and for us to pass them by, would be tacitly to admit that a dreadful disease, over which we have no control, and the laws of which we do not understand, might be communicated by vaccination. Such an impression left upon the public mind would be fraught with unmixed evil, and would go far, by the imaginary terrors which it would excite, to counteract the real blessings which the discovery of vaccination has conferred upon mankind. We shall adopt a wiser and a better course: we shall study the disease as it appeared at Rivalta, and compare it with what was previously known of similar cases elsewhere, and we then shall be able to determine the exact nature of the disease which has so unexpectedly appeared, the symptoms by which it may be recognized, the conditions under which it may possibly recur, and, in all probability, how it may for the future be with certainty avoided.

In such a case, to be forewarned is to be forearmed. To know the laws of the development of a disease is

to strip it of all its dangers, so far as artificial inoculation is concerned, at the hands of the experienced surgeon. The full acknowledgment of the danger is the real source of safety. We might, indeed, fancy ourselves called upon by the maxims of a mere selfish prudence to pass by these palpable dangers of vaccination—to attempt to ignore their existence—to hush them up from the hearing, and to conceal them from the view, of all outside the profession, lest the whole fabric of faith in vaccination be undermined or destroyed. But the maxims of a narrow, selfish prudence are, in their essence, of a short-lived power ; and being destitute of the strong foundations of truth and right, in the long run ever miss their proposed end. They are the results, not of salutary caution, but of undefined fear. Under this influence the nerves of the understanding are relaxed, and the pressing peril of the *imagined* danger so confounds all the faculties, that no *real* danger can be properly provided for, can be justly estimated, or can be so much as fully seen. The eye of the mind is thus dazzled and vanquished. This short plan of policy must certainly fail ; and in investigating the circumstances connected with twofold inoculation, to ignore the subject with the facts hereafter to be related before our eyes, would be to plunge into a dark gulf, with all the precipitation of fear. But let us, on the contrary, be guided in the matter by a true foresight and prudence. The nature of a wise caution is, without question, to be conversant and familiar with the causes of our hidden fears, and by forcing them into the light of reason and reality, to

produce them in their proper shapes, and in the face of all men to show them for what they are.

We therefore proceed with a narrative of the facts observed at Rivalta, and shall subsequently compare them with those which have occurred in the experience of other medical men.

On the 24th of May, 1861, Giovanni Chiabrera, the first vaccinifer, was vaccinated by a surgeon named Cagiola. The lancet employed was reported to have been perfectly clean, and the lymph used had been supplied in a capillary tube by M. Ivaldi, of Acqui. The child, at that time eleven months old, was in a state of apparent health. On the tenth day, that is on the 2nd of June, forty-six children were vaccinated by the lymph procured from the first vaccinifer. Ten days after this the second vaccinifer, Menzone, furnished lymph for the vaccination of seventeen other children.

Within two months, forty-six of these children were infected with a disease considered by a commission appointed for the purpose of investigating the subject to have been syphilis.

The first vaccinifer was in a state of marasmus on the 7th of October, and subsequently suffered from alopecia; the second vaccinifer died three months after the operation, and before much attention was directed to the subject, and consequently before his symptoms were particularly noted.

In the country district about Rivalta, the poor, it appears, seldom apply to a medical man except in cases of great need, and sometimes only in the last

necessity. This circumstance will account for the scanty details in the early history of these cases.

Dr. de Katt, who, according to the Report of the Commission, is a physician of much intelligence and reputation, says that the symptoms considered to be syphilitic showed themselves at periods varying from ten days to two months. The mean time was twenty days after vaccination.

In some cases, no sooner was the vaccine vesicle healed than it became surrounded by a red, livid, and copper-coloured areola. It then extended and ulcerated afresh. In other instances, ulcerations formed upon cicatrices left by the vaccination, and these were covered with scabs, which were continually renewed. In a certain number the vaccine vesicles had an unfavourable appearance from the first, and were accompanied by a general eruption, which the common people confounded with the small-pox, and the nature of which is not clearly described upon any medical testimony.

On the 7th of October six children were dead without any treatment, and before the attention of the medical men had been directed to the subject. Three children were then in a state of danger; fourteen were recovering under specific treatment; and one was well. The treatment consisted of inunction of Neapolitan (mercurial) ointment, with the administration internally of iodide of potash and syrup of sarsaparilla. The symptoms observed in these children were mucous tubercles around the anus and on the genitals; characteristic ulceration of the mucous membrane of the lips

and the back of the throat ; specific enlargement of the lymphatic glands, sometimes in the groins, and sometimes in the neck ; different forms of cutaneous eruptions, considered by the Commission to be syphilitic ; alopecia, secondary ulcerations, and tubercles. Two children at this date were in a state of marasmus and syphilitic cachexia. At this period some mucous tubercles had already appeared on the breasts of some of the mothers who suckled their children. Mercurial treatment was found now to be very effectual in the treatment of these cases.

On the 18th of November the mother of the first vaccinee had from ten to twelve mucous tubercles on the labia. On the 7th of October this woman had been carefully examined, and was then perfectly free from any disease of the kind. She had two other children living, perfectly healthy.

On the 7th of November six other mothers had ulcers on their breasts, which the medical men who formed the Commission reported as syphilitic. Another child at this period was dead.

On the 9th of February, 1862, twenty mothers or nurses, who were known to have been healthy and well on the preceding 7th of October, had been infected by their children. These twenty patients at this date presented all the symptoms of secondary syphilis. (Described in No. 4 of the *Gazzetta dell' Associazione Medica*).

The details of these cases will doubtless be demanded, and an abstract of them is accordingly furnished.

1. Morbello, Domenico, aged twenty months, was vaccinated on the 2nd of June, 1861, from the first vaccinifer. The Commission reported, on the 7th of October following, that the cicatrix left was of a copper colour and hard. The little patient had six flattened tubercles around the anus, syphilitic roseola upon the body, and partial alopecia. His mother was healthy.

2. Voglino, Guiseppe, aged fifteen months, vaccinated on the 2nd of June from first vaccinifer. Cicatrices left by vaccination livid, hardened, and large. They remained unhealed for two months and a half. In October there were tubercles around the anus, and an eruption of syphilitic tubercle upon the body. The mother was healthy; she had some small boils not presenting any suspicious characters.

3. Marescotti, Gerolamo, aged nine months, vaccinated on the 2nd of June. In October the Commission reported that he had seven or eight flat tubercles around the anus, alopecia, and a hoarse voice; the vaccine cicatrices were hard and large, and the axillary glands were similarly affected. The mother was healthy.

4. Panodi, Maddalena, aged two years and a half. The scars of the vaccine vesicles are reported as indurated, of a copper colour, and very large; they secreted a fluid, and were covered by soft scabs; the axillary glands were enlarged. The child was in a state of syphilitic cachexia, accompanied by marasmus. There existed innumerable flat tubercles around the anus and vulva; these were ulcerated, of a grey colour, and

secreting a puriform fluid ; enlarged inguinal glands ; the lips were covered with ulcers ; alopecia ; the voice was rough, and sounded as if the child were affected with croup. The mother was healthy.

5. Morbelli, Guiseppe, aged sixteen months, vaccinated June 2nd. In October the remains of the vaccine vesicles were still discharging and were indurated ; there was specific enlargement of the axillary glands ; brown spots existed around the groin and upon the genitals ; there were traces of eutaneous syphilitic eruption on the trunk and extremities ; skin mottled ; enlargement of cervical glands ; scabs on the head ; hoarse voice. Nurse healthy.

The foregoing cases have been related together, as they all presented hardened cicatrices at the points where the vaccination had been performed. In most of the other cases this induration was not observed, or is not recorded ; but it must be recollected that the vaccinations took place in the beginning of June, and that the Committee did not make their report until the October following. During the interval no accurate observations appear to have been made with regard to the condition of the infected children.

6. Carozzo, G., aged fourteen months, vaccinated June 2nd. The vaccine vesicles did not make their appearance until a month after the vaccination. The cicatrices are reported as "abnormal." He was previously in good general health. In October he had fourteen flat ulcerated tubercles around the anus ; there were three spots of "circinnate" syphilitic eruption on the skin of the abdomen, and others less

marked upon the back ; the posterior cervical glands were rather more enlarged than natural ; the mouth and lips free from disease. Parents healthy.

7. Cupena, Theresa, aged fifteen months, vaccinated June 2nd. Reported in October as of a weak constitution, pale, and with a flaccid skin ; livid tubercles scattered over the skin, some suppurating, others cicatrizing ; there was an ulcer on the chin ; the vaccine cicatrices irregular. The health of the mother good, but she presented two small suspicious tubercles on the nipple.

8. Morbello, Antonia, aged six months, vaccinated June 2nd. Cicatrices reported as irregular. In October she had ulcerated mucous tubercles on the commissure of the labia, and a serpiginous ulcer on the chin ; there were livid, copper-coloured blotches on the thighs and nates, said to have been preceded by ulcerated spots, which were regarded as symptoms of the small-pox ; the genitals healthy. Mother in good health.

9. Zoccola, E., vaccinated June 2nd. Reported as presenting flattened tubercles in the groin, on the vulva, in the perineum, and around the anus ; there was also ulceration at the commissure of the lips. The father was healthy. There existed a suspicious ulcer on the nurse's nipple, and this was accompanied with axillary adenopathy.

10. Saccone, Teresa, aged sixteen months, vaccinated June 2nd. The report in October states that the vaccine cicatrix has gradually ulcerated ; it has a livid copper-coloured hue around it. There are eight

flattened, suppurating tubercles around the anus, and ten indurated secondary syphilitic sores on the vulva; these resembled mucous tubercles. She is apparently weak, with a pale face; aphonia. Mother healthy. Had small ordinary boils only on one shoulder.

11. Garbarino, D., aged five months, vaccinated June 2nd. In October the vaccine cicatrix was livid and coppery; there were numerous livid cicatrices, which had suppurated long before, and which now remained elevated above the level of the skin, around the anus; the cervical glands enlarged; specific induration of axillary glands; health moderate, improving. Mother sound.

12. Ferraris, Lucia, aged one year, vaccinated June 2nd. In October there were livid spots, the traces of former ulcerations which had extended round the superior and internal part of the thigh; this ulceration the mother said had commenced with a vesicle; voice hoarse. Mother healthy, with the exception of an abscess in breast from ordinary acute inflammation.

13. Coggiola, Maria, aged fourteen months, vaccinated June 2nd. The vesicles healed, but after a month they re-ulcerated. In October she had seven or eight flattened tubercles around the anus, in the perineum, and upon the vulva. Child under mercurial treatment. Mother healthy.

14. Tortolo, Giovanni, aged eight months, vaccinated June 2nd. The vaccine vesicles soon became converted into ulcers, and remained open for more than three months. In October they presented large

cicatrices, brown and livid. She had had syphilitic roseola for a month and a half. There was alopecia and a hoarse voice ; copper-coloured spots existed on the skin of the face, neck, thorax, abdomen, and extremities ; no syphilitic mark on genitals or anus ; specific enlargement of cervical glands. Mother quite healthy.

15. Voglino, F., aged sixteen months, vaccinated June 2nd. In October the vaccine cicatrices were deformed and livid ; the axillary glands were specifically enlarged. There was a general syphilitic papular eruption on the skin ; a serpiginous ulcer existed on the chin and lower lip ; aphonia ; no disease on the genitals or around the anus. The mother had five characteristic syphilitic ulcers on the left nipple, with specific enlargement of the axillary glands.

16. Testa, L., aged eight months, vaccinated June 2nd. In October there were innumerable livid spots on the inferior extremities and on the nates ; traces of syphilitic papulæ on the skin ; the subcutaneous cellular tissue was indurated at several points ; a grey lardaceous ulcer, presenting the appearance of a fissure in the skin, existed on the posterior part of the left thigh ; aphonia ; complexion unhealthy. Mother sound.

17. Morbelli, Carlo, aged two years, vaccinated June 2nd. In October the scar left by the vaccination was reported as imperfect and livid ; general syphilitic, squamous, and papular eruption on the back. There were eight or nine tubercles around the orifice of the anus ; two secondary ulcers on the prepuce and one on the glans ; specific enlargement of the glands in the

groin ; flat pustules (tubercles ?) on the lip and on the tonsils ; enlarged cervical glands ; adenopathy of axillary glands. Mother healthy.

18. Pansare, Caroline, aged sixteen months (first series). Cicatrices of the vaccine pustules, broad, with a third part violet coloured and ill-shaped ; axillary glands affected ; mucous tubercles around the orifice of the anus ; traces of pustules and ulcers on the nates, with livid cicatrices as in the other cases above mentioned. Nurse healthy.

19. Morbello, Lewis, aged ten months (first series). Ulcerations at the lips and commissures, like patches of mucus, corresponding with each other ; cervical *pleiades* ; crustaceous eruption on the head ; flat tubercles around the anus ; skin spotted with a rose-coloured syphilitic tint ; vaccine pustules, livid and suppurating even now, after four months. The mother was examined by the official commissioner, and found healthy in the genitals, on the 27th of September last ; now there appears a small ulcer on the areola of the left mamma, and a flattened tubercle, resembling a cicatrix, on the areola surrounding the nipple on the right side. Affection of the axillary glands increases.

20. Garberini, John, aged eight months. A very extensive ulceration on the chin ; here and there some very suspicious-looking cutaneous tubercles, resembling boils, which suppurate, but are indolent, resembling the gummy tubercle ; voice hoarse, appearance weak. Mother healthy.

21. Corelli, Louisa, aged eighteen months. Imperfect vaccine cicatrices, suppurating at the expiration

of four months ; axillary glands affected ; innumerable flat, suppurating tubercles at the anus and vulva ; inguinal glands indurated ; aspect unhealthy. Marked improvement from the curative means used. Mother as yet healthy.

The following are the cases described by De Katt, and afterwards seen by Dr. Pacchiotti :—

22. Bianchi, Agostino, aged two years (first series of vaccinations). Skin spotted from cutaneous syphilis ; roseola ; aspect cachectic : vaccine pustules imperfect, and suppurating at the expiration of two months ; axillary glands affected. Nurse and father healthy.

23. Curaccia, Antonio, aged six months (first series). Died on the 14th of August, after an acute pustulous eruption, very like that of some of the other children at this period, according to the nurse's assertion, who regarded it as a case of malignant small-pox. The vaccine pustules were still suppurating previous to death. The case was not visited by De Katt.

24. Curaccia, Josephine, aged eleven months (first series). Vaccine pustules suppurating at the expiration of a month ; skin spotted with syphilitic roseola, followed by syphilitic ophthalmia ; flat tubercles around the anus and vulva ; voice hoarse. Father and mother healthy.

25. Castelfero, Andrew, aged one year (second series). Vaccine cicatrices ill-shaped, of a coppery-red colour ; these suppurated for more than a month, then closed, and again re-opened after fifteen days, and suppurated for another two months ; they are now healed. In the groins and at the anus he had

flat ulcers with a lardaceous surface ; an impetiginous crust on the head ; loss of hair (alopecia) ; the inguinal glands enlarged ; cervical pleiades ; cachectic habit ; anæmia. Father and mother healthy.

26. Chiabrera, Domenico, aged one year (first series), died Sept. 23rd. Presented vaccine pustules, still suppurating, and ulcerated mucous tubercles in the genital parts. Died of erup in forty hours. Father and mother healthy.

27. Coggiola, Catherine, aged two years (first series). Vaccine pustules suppurating for two months ; numerous ulcerated mucous tubercles about the genitals and at the anus ; constitution good. Mother healthy.

28. Dalca, Biagio, aged two years, (first series). Presented at the first visit a cutaneous syphilitic eruption of roseola, producing a mottled appearance of the skin ; cachectic aspect ; anæmia. Treatment mercurial. General improvement.

29. Ferraris, Ottavio, aged nine months (second series), died Sept. 25th. Covered with pustules, according to the parents, and in a consumption, with colliquative diarrhoea ; not seen, however, by De Katt.

30. Gunone, Nicolino, aged two years (first series). Vaccine pustules very large, ill-shaped, and of a coppery colour ; three suppurated for about a month, then closed, then again discharged for about four months ; now healed. Some flat pustules showed themselves in the groins, and six around the anus ; those of the groins are now healed ; the others are in process of cicatrization. Mother and father healthy.

31. Grua, Catherine, aged nine months (second series). Mucous tubercles with a lardaceous surface around the anus and on the genitals. Was treated by Dr. Moponero, from Rocca Grimalda, with iodine and bichloride of mercury. Father and mother healthy.

32. Imperiale, Domenico, aged one year (second series). Vaccine pustules suppurated at the expiration of two months ; flat pustules at the groins and at the anus ; enlarged glands at the groins ; incipient emaciation.

33. Manzone, Louisa, aged six months, was vaccinated on June 12th by means of the vaccine matter drawn with a lancet from the pustules of the child Chiabrera (first vaccinifer) on the tenth day from their first appearance, together with forty-six children of the first series, all vaccinated at the same sitting. This child (Manzone) served to vaccinate from arm to arm on the 12th of June seventeen other children, seven of whom were afterwards infected with syphilis. This was the account given by the nurse in Rivalta. But the father and mother, who lived in Aqui, had hardly had notice of the disease of which their infant daughter was affected, when they removed her at the beginning of August (two months after the vaccination) from Rivalta to Aqui, in order to have a consultation with Dr. Silventi. This experienced surgeon recognized that she was affected, in the first place, with a papular syphilitic eruption on the back, abdomen, upper and lower extremities : the papulæ were in part of a rose colour, and in part covered with fine whitish scales ;

secondly, with mucous pustules, or flat tubercles, suppurating in the centre, scattered in great number on the great lips of the vulva, around the anus, on the adjoining nates, and the upper and internal parts of the thighs; thirdly, with "plaques muqueuses" on the two commissures of the lips, and with an abundant flow of viscid saliva; fourthly, with congestion and indolent swelling of the cervical, inguinal, and mesenteric lymphatic glands; fifthly, with marasmus in an advanced stage; sixthly, and lastly, the vaccine pustules were still suppurating, and one of these, as large as a French centime, was surrounded by a coppery ring, and in part covered with a black crust. He then declared the child infected with secondary syphilis, and seriously recommended to the parents that it be treated in a proper way. As sometimes happens, the wise advice was not listened to. No treatment was adopted. On the 10th of September, however, (three months after the vaccination,) the child died of marasmus, with a bloody flux, (according to the parents, who went to see her.) The autopsy could not be effected. But the parents relate that, although the cutaneous syphilis had almost vanished some days previous to death, the flat tubercles at the anus, pudendæ, and at the mouth continued even to the very last, in the same state as that in which they were seen by Dr. Silventi. The ulcers on the arms, especially the largest, remained to the last covered with a black crust. The father and mother were always most healthy, and are so still; and Dr. Silventi, who from the first visit sought carefully whether Manzone had been born

syphilitic, or had acquired the syphilis by means of the vaccination, had both from the parents and the nurse the reply that the child, previously healthy, only became ill some time after the vaccination, as was the case with all the other children. But the nurse who suckled it (perfectly healthy in August when she saw Dr. Silventi) was now affected with ulcers on one breast.

This is the account gathered with great exactness from Dr. Silventi, who was one of the members chosen by the Congress of Acqui to examine the children of Rivalta.

34. Muzza, Bernard, aged eight months (first series). Vaccine pustules suppurating for two months; flat ulcerated pustules at the genitals and anus; enlarged inguinal glands; voice hoarse; roseola.

35. Morbelli, Antoinette (of Julius and Charlotte), aged seven months (first series). Showed innumerable mucous tubercles on the genitals, on the lateral and internal parts of the thighs, and at the anus; roseola; loss of voice; vaccine pustules irregular; axillary glands indurated.

36. Morbelli, Joseph (of Michael and Mary), aged eight months (second series). Died 26th of July, without having been seen by any medical man. According to the parents, his body was covered with pustules resembling those of the other boys. To the eruption succeeded diarrhoea, marasmus, and death.

37. Morbelli, Isabella (of Sebastian and Mary), aged eleven months (second series). Vaccine pustules suppurating for about two months. Covered with flat pustules, with lardaceous surface, all about the pelvis,

genitals, and anus, and also at the commissure of the lips ; roseola ; alopecia ; aphonia. Now showing indications of marked improvement.

38. Morbelli, Lewis (of Michael and Angela), aged two years (first series). Flat ulcerated tubercles at the genital parts, in the groins, and around the anus ; roseola ; voice hoarse ; axillary, cervical, and inguinal glands enlarged and indurated ; vaccine cicatrices indurated.

39. Morbelli, Semino (of Bernard and Mary), aged two years (second series). Flat ulcerated tubercles at the genitals and anus ; vaccine-looking pustules alongside suppurating ; axillary glands affected. Now very much better.

40. Morbelli, Theresa (of John and Catherine), aged ten months ; vaccinated 2nd of June, died 10th of September. Particulars wanting.

41. Picasso, Joseph, aged two years (first series). Depressed ulcers in the groins, genitals and anus ; somewhat emaciated ; anæmic ; now in the way of recovery ; vaccine cicatrices indurated.

42. Scianca, Antonia, aged eighteen months (second series). Presents a marasmatic aspect ; vaccine pustules suppurated for upwards of two months ; mucous pustules at the genitals and anus ; ulcerations at the commissure of the lips ; aphonia ; axillary glands affected ; syphilitic roseola ; anæmia. The mother was found to be affected with two indurated ulcers on both nipples, accompanied by indolent and increasing enlargement of the axillary glands.

43. Voglino, Michael, aged sixteen months (first

series). Some flat pustules at the genitals and anus ; vaccine pustules discharged for two months ; cicatrices ill-shaped, indurated, with affection of the axillary glands.

44. Viotti, Annunciata, aged ten months (second series). Presented a eutaneous eruption ; flat pustules at the anus and genitals ; inguinal glands enlarged ; cervical pleiades ; cachectic habit ; anæmia ; aphonia ; alopecia ; vaccine pustules irregular and still discharging.

From the history of the two vaccinifers—Chiabrera and Manzone—compared with that of the greater number of the syphilitic children, the following inferences are drawn :—

First. That Manzone, like Chiabrera, was syphilitic.

Secondly. That she had not already an hereditary syphilitic taint, latent, and put into activity by the inserted vaccine matter, but the syphilis actually entered with the insertion of the vaccine lymph. The healthy parents and the syphilitic ulcers on the arms which followed the vaccine pustules prove it—a rule which, however, was not observed in the child Chiabrera.

Thirdly. That these ulcers were the first manifestation of the disease.

Fourthly. That after a certain time of incubation the secondary syphilis appeared, which was in full eruption two months after the vaccination.

Fifthly. The transmission of the syphilis effected from the mouth of the child, Manzone, to the nipple of the nurse, again demonstrates that the child was truly

infected with syphilis, and had communicated it just as the child Chiabrera had transmitted it to the nipple of the mother.

Sixthly. That as the child Chiabrera had given syphilis with the vaccine lymph to Manzone on the tenth day of the vaccination, so Manzone gave syphilis to the seven children of the second series, with the vaccine matter taken on the tenth day of her vaccination.

In the next lecture the history of this disease at a more advanced period will be given.

LECTURE VIII.

VACCINO-SYPHILITIC INOCULATION.

WHEN the syphilitic disease was first recognized and described in Europe, about the year 1483, no interval was noted between the appearance of the primary and secondary affection; and it is worthy of remark that, although many authors after the year 1500 make mention of the affection of the genital parts, not one author before that time points out such an affection as essential to, or characteristic of, this disease. All look upon it as contagious without coition.* It appeared at once, as far as the accounts inform us, by an eruption of non-suppurating tubercles over the body; or by "pustules which afterwards became hideous ulcers," or were covered by foul scabs. During the first twenty years of the sixteenth century, syphilis had still a great resemblance to tuberculous leprosy. "This same virus propagated since, particularly at present, by an almost general inoculation, has become much less deadly in its effects, and milder in its symptoms."†

* Swediaur.

† Ibid.

Even in the year 1519, according to Ulrich van Hutten, the disease had so changed its symptoms that it could even then be scarcely looked upon as of the same nature as when it originally appeared. How different it was, however, even at that time from that which is witnessed in the present day, will appear from Fracastor's description, published in 1521 :—

“Protinus informes totum per corpus aehores
 Rumpabant, faciemque horrendam et pectora fœdè
 Turpabant; species morbi nova; pustula summæ
 Glandis ad effigiem, et pituita mareida pinguis,
 Tempore quæ multo non post adapertha dehiscens,
 Mucosâ multum sanie taboque fluebat.
 Quin etiam erodens altè, et se funditùs abdens
 Corpora pascibat miserè, nam sæpiùs ipsi
 Carne suâ exutos artus, squallentiaque ossa
 Vidimus, et fœdo rosea ora dehiscere hiatu,
 Ora, atque exiles reddentia guttura voces.
 Tum sæpè aut cerasis, aut Phyllidis arbore tristi,
 Vidisti pinguem ex udis manare liquorem
 Corticibus: mox in lentum durescere gummi.
 Haud secùs hac sub labe solet per corpora mueur
 Diffluere: hinc demùm in turpem concreescere callum.
 Unde aliquis ver ætatis, pulchramque juventam
 Suspirans, et membra oculis deformia torvis
 Prospiciens, fœdosque artus, turgentiaque ora,
 Sæpè deos, sæpè astra, miser erudelia dixit
 Intèrea dulces somnos, noctisque soporem
 Omnia per terras animalia fessa trahebant:
 Illis nulla quies adcrat, sopor omnis in auras
 Fugerat. His oriens ingrata Aurora rubebat;
 His inimica dies, inimicaque noctis imago.
 Nulla Cercs illos, Bacchi non ulla juvabant
 Muncra non dulces epulæ, non copia rerum;
 Non urbis, non ruris opes, non ulla voluptas.”

It appears evident, according to cotemporary au-

thors, says Swediaur, that this disease was at that time generally communicated without coition, and that many died of it without having had the slightest affection in the genital parts—exactly as Bowman observed in the new disorder in Canada. “On its first appearance in any climate,” he says, “the syphilitic disease is very violent in its effects; but it is still more so when imported from a warm to a cold country. The disease in Canada is a proof of this; and the pox which appeared in Europe in the fifteenth century may possibly confirm the remark. After some time the disease appears to have become milder, its progress slower, its symptoms less violent, and, in the present day, many of them are quite disappearing; so that perhaps finally, at a more advanced period of its decline, it will only affect the organs of generation, which, in its beginning, its return, or *its attack on a new people*, perhaps by *uniting itself with some other poison*, may make the virus act with more effect and violence.”

Now, it is a remarkable fact, that when the disease which we have been considering appeared at Rivalta, where it was said to have been previously unknown, no attention was at first directed to the primary disease. The sluggish, indolent action (the specific induration) which characterizes the commencement of the disease was not particularly observed; and, in some cases, the period at which the symptoms appeared after the application of the poison was unusually short. But after this disease had passed through the constitutions of the children, it appeared again

in characters easily recognized in those who received it from them. In the nurses and mothers there was the usual period of incubation before the appearance of the primary symptoms, the adhesive inflammation (the indurated sore) was again seen to be the morbid process by which the disease entered the patient's system, and the ordinary time was found to elapse between the appearance of the primary and the secondary symptoms.

Again, at Rivalta, the disease when it first attracted attention was accompanied by an eruption of so-called pustules, and was confounded with small-pox. The same thing exactly happened when the affection appeared in Europe in the fifteenth century.

As the disease has become milder in its effects, and more chronic in its nature in Europe, its different stages and the distinct morbid action by which each is distinguished have been gradually unfolded. Thus at first the disease was considered as of one kind only, and all its effects were attributed to one poison. It was not until the present century that the distinction was clearly drawn between primary and secondary affections, and it was not until the year 1854 that the different *modes of origin* of the two kinds of syphilitic sores were recognized. It is, then, not surprising that at Rivalta, where this disease is said to have appeared for the first time in a highly contagious form, the descriptions of the first cases that occurred should be very different from those of the disease as it is now recognized in the capitals of Europe. A period of want of observation and of confusion existed with re-

gard to the descriptions of the cases, and in some of the worst instances, which proved rapidly fatal, we almost entirely lose the distinctive characters of the syphilitic disease. But it is very different as soon as the attention of educated medical men is directed to the subject. Dr. Pacchiotti says—"I saw that the syphilis in these cases had always its origin, not in the soft non-infecting ulcer, but in the indurated infecting ulcer of Ricord. There was a longer or shorter period of incubation between the inoculation and the appearance of the consequent ulcer, so that the infecting chancre has the same relation to syphilis as the bite of a dog has to hydrophobia. After a second period of incubation, secondary symptoms manifested themselves." Dr. Pacchiotti tells us that he has described what he has seen without excitement, without preconceived ideas; at one time with the hesitation of a man who doubts, afterwards with the conviction of a man who is slowly convinced. He relates what he has seen, as he tells us, with the severe impartiality of an observer who writes without reference to the opinion of others, or to what has been written before.—(*Op. cit.*, p. 12.)

Dr. Pacchiotti paid a third visit to Rivalta on the 5th of January. He found that the children under treatment were much better, and the majority nearly well. There were, however, still ample manifestations of syphilis.

In Chiabrera, the first vaccinifer, there was complete alopecia. The diarrhoea had ceased, and the voice was now clear. There existed, however, a mucous tubercle on the conjunctiva of the inferior lid of the left eye.

Carozzo now presented two flat tubercles near the anus, with indurated glands in the groin. The cutaneous eruption had disappeared.

Cupena showed excavated cicatrices of former ulcerations in various parts, with fresh indurated syphilitic tubercles upon the chest and nates.

Garbarino presented two mucous pustules upon the anus, two grey indurated ulcers on the nates, mucous tubercles, and indolent enlargement of the glands in the groin. Voglino, Garbarino, Panodi, Gunone, and Scianca all presented similar symptoms at this time.

At this period the Commission undertook a rigid investigation of the vaccine cicatrices. They observed their deformities, anomalies, and irregularities, which indicated that they had deviated from their natural course. In some children these cicatrices were seen to be excavated, deep, and large; still of a livid or coppery hue. In some, the base was noticed to be hard, and it was remarked that this hardness extended beyond the cicatrix itself. In some of the children there was an indolent enlargement of the axillary glands on the side corresponding to that upon which the indurated cicatrix was found. In some, an ulcer still existed, with an indurated base and a moist surface, from which scabs were continually separating, and as frequently reproduced. In some of the little patients the scabs were adherent, and the cicatrix below was indurated, livid, or copper-coloured.

It was ascertained in all the cases that at a certain period after vaccination the vesicles had degenerated.

It was not possible to ascertain the precise period at which this change had taken place, as no medical aid was sought. Still it appeared certain, from the description given by the mothers, that the vaccine vesicles were converted into ulcers, which were very indolent in their nature ; and when first seen by the Commission, four months after vaccination, they still presented the form of serpiginous scabby ulcerations, always with a coppery lividity. Upon these grounds the Commission concluded that the vaccine vesicle had been converted into a syphilitic sore in these children ; and that the first symptom of syphilis in the children who had been vaccinated was a syphilitic ulcer at the point of inoculation.

At the same time that the condition of the children was thus noted, the state of the mothers of some of the infected children was also recorded.

1. The mother of Chiabrera (the first vaccinifer) had innumerable flattened tubercles on the vulva. There was at this time the cicatrix of an indurated ulcer on the left breast, with some trace of specific enlargement in the glands of the corresponding axilla. She suffered much from rheumatic (?) pains, with severe headache and sleepless nights. She had become much emaciated ; there were ulcers on both tonsils ; impetigo ; loss of hair, with enlargement of post-cervical glands ; syphilitic roseola on the skin.

2. The mother of Carozzo, who was ascertained to have been healthy in October, showed a recent cicatrix, with the indurated base of a syphilitic ulcer, on the right mamma, between the base of the nipple and the

areola. She had also chronic indolent enlargement of the glands in the corresponding axilla. She stated that this ulcer had existed for two months. There were many mucous tubercles on the vulva, and chronic indolent enlargement of the glands in the groin ; a diffuse syphilitic roseola mixed with the papulæ covered the whole of the abdomen, and extended to the chest, hips, arms, neck, and face ; there was impetigo, with incipient alopecia.

3. The mother of Cupena, who was noticed in October to have been affected with two little suspicious tubercles on the left breast, now showed these tubercles converted into indurated cicatrices, with chronic indolent enlargement of the axillary glands of the same side. She had now also flattened tubercles on the vulva and around the anus ; loss of hair, with impetigo ; headache ; rheumatic pains ; alopecia and diffuse syphilitic roseola on the skin. There were in addition two grey-coloured ulcers on the tonsils.

4. The mother of Saccone, who was ascertained to have been healthy in October, now had an ulcer on the left breast, in the process of cicatrization, with an indurated base, and raised above the level of the skin. There was chronic enlargement of the axillary glands in the corresponding arm-pit. The ulcer had been open about two months. For the last twenty days there had been mucous tubercles on the great and lesser labia of the vulva, with specific chronic enlargement of the inguinal glands. There were now, in addition, a most manifest syphilitic roseola over the whole body : an impetiginous affection of the scalp, and chronic

enlargement of the post-cervical glands. A large deep ulcer, with an ash-coloured surface, was seen on each tonsil.

5. The mother of Voglino, who was before seen to have five characteristic syphilitic ulcers on the left breast, now presents the indurated copper-coloured cicatrices of these ulcers, accompanied by specific ganglionic enlargement of the corresponding axillary glands. There existed also an impetiginous affection of the scalp, with incipient alopecia; cervical *pleiades*; a large ulcer on the tonsil; syphilitic roseola mixed with syphilitic papules and psoriasis.

6. The mother of Morbello, who was ascertained to be healthy in October, now presented an indurated sore on the right breast, which had existed a month and a half, and was accompanied by chronic enlargement of the axillary glands. She had a large number of flattened tubercles on the vulva and around the anus; mucous tubercles on both tonsils; an incrustation on the head; cervical *pleiades*; alopecia; syphilitic papules on the back, arms, and shoulders; syphilitic roseola upon the abdomen. An ulcer and granulations were found to exist on the mouth of the womb.

7. The mother of Voglino, who was ascertained to have been healthy in October, presented a small cicatrix at the base of the right nipple. This would have escaped a superficial examination, but was found to be hard, but unaccompanied by specific enlargement of the glands in the axilla. There were flattened tubercles around the anus, without any corresponding

enlargement of the inguinal glands ; she had also loss of hair ; impetiginous scabs on the head ; ulcers on the tonsils, with cervical *pleiades* ; there was, in addition, very evident syphilitic papules on the skin, and syphilitic eczema.

8. The mother of Marescotti, healthy in October, showed a small indurated cicatrix on the left breast, without glandular enlargement in the axilla ; this had existed for two months. There were now mucous pustules on the vulva ; impetiginous crusts on the scalp ; incipient alopecia ; ulcer on the tonsils ; syphilitic roseola and syphilitic papules on the skin.

9. The mother of Garbarino, healthy in October, presented two cicatrices, still indurated, on the two breasts, with corresponding multiple indolent enlargement of the glands in the two axillæ ; there were moist tubercles on the vulva, in the perineum, and around the anus ; syphilitic impetigo, with scabs on the scalp ; alopecia ; ulcers on the two tonsils ; cervical *pleiades* ; general and characteristic eruption of syphilitic roseola.

10. The mother of Scianca, who was seen in November by Dr. De Katt, and who then had two suspicious ulcers on the two breasts, was found to be most severely affected with constitutional syphilis. There were now two recent cicatrices of two syphilitic ulcers : these were superficially indurated, with a large base, of a coppery colour, and with their surface raised above the level of the surrounding skin. The axillary glands were enlarged, indurated, and indolent. There were many flat tubercles on the great and lesser lips

of the vulva, on the perineum, and around the anus : some of these were ulcerated. On the anterior lip of the mouth of the womb there existed an ulcerated tubercle, and this was accompanied by leucorrhœa. On the two tonsils were two enormous ulcers extending to the soft palate ; these were deep, indolent, and of a greyish colour. Very manifest and specific enlargement of the cervical glands, and enlargement of the submaxillary glands. Confluent impetigo, with crusts on the scalp ; alopecia ; persistent pains in the head, which prevented the patient sleeping at night. There was ulceration of the mucous membrane in the nasal fossa, both on the septum, and on the turbinated bones, with purulent discharge from the nostrils. Two fissures existed at the commissure of the lips. The whole body—face, neck, trunk, and limbs—was covered by a confluent syphilitic eruption. This in some places was papular, in other parts pustular, and in others again presenting dense scabs. In other places again there were spots of acute syphilitic ecthyma. The patient was worn out, emaciated, and anæmic, with loss of appetite and restless nights.

11. The wet-nurse of Zoccola, whom Dr. De Katt noticed in November to be affected with a suspicious ulcer of the right nipple, now presented a hardened copper-coloured cicatrix on the same spot. There was chronic indolent enlargement of the corresponding axillary glands. The secondary symptoms were,—flattened tubercles at the vulva ; a soft, large, and grey-coloured ulcer on the internal surface of the pos-

terior lip of the mouth of the womb ; leucorrhœa ; ulcers on the tonsils ; and syphilitic roscola.

It may be well here to pause in the narrative of this most extraordinary series of cases, and to reflect upon the facts which we have now before us. The cases at Rivalta have been received with so much prejudice, and conclusions concerning them have at once been arrived at, and made public by some who have evidently never read the details, that it is necessary to be particular in the relation of facts and in the inferences thence derived. It is important, then, to determine accurately what the disease was which was communicated to these twenty mothers or nurses of the vaccinated children, and to them only, out of a population of 2,000. And here we may take for our guide Ricord's first conclusion, quoted at the commencement of these lectures : " A chancre is known for certain, neither because it has appeared after suspicious contact, nor on account of its situation, nor because it has an indurated base, nor on account of its colour, or its shape, or the character of its edges, nor by the red areola by which it is surrounded, but by its being inoculable so as to produce exactly the same disease again." That which is true of one form of syphilis or of one kind of sore, is true in this respect of another. If we, then, accept Ricord's own test, we have simply to ask ourselves, Was the disease in these nurses and mothers the same as that which existed in the children ? (the mode of transmission by the breasts being clearly traced.) In the children we find a persistent indolent action leaving a copper-coloured stain, and often an

indurated cicatrix, accompanied by multiple chronic enlargement of the corresponding lymphatic glands ; followed by mucous tubercles, ulceration of the throat, loss of hair, and various forms of eruption which the Commission, appointed for the purpose of investigating the disease, pronounced to be syphilitic. In the mothers we have a persistent indolent form of adhesive inflammation on the breast leaving an indurated cicatrix, accompanied by chronic multiple enlargement of the axillary glands, and followed by mucous tubercles, ulcerations of the throat, loss of hair, and various forms of eruption on the skin, which the medical men who formed the Commission, and others who did not, pronounced to be syphilitic. It would seem superfluous to reiterate the question "Was this the same disease?" were it not for the enormous amount of prejudice which the dogma of Ricord, which long held the minds of men in subjection, still exercises upon public opinion.

The great master had said that no secondary symptom could be communicated ; therefore it was formerly argued, and is still argued by some, that such cases as those above related could not be syphilitic because there was no communication between any *primary* disease in the children and the breasts of the mother. Here we may again refer to Swediaur's opinion, as quoted in the first of this series of lectures, where he talks of those who "by an ill-founded theory suffer the syphilitic virus to be communicated, and the disorder propagated through whole families." It must, however, in justice to the great luminary of this branch

of medical science to whom reference has been made, be stated, that his mind has at all times been open to conviction and to proof, and that he has now materially modified his opinions, which for so long a period exercised such an extensive sway. But there are still lesser luminaries, who for a time shone with borrowed light, and who are not so easily convinced. It is therefore necessary to multiply examples.

In October, 1858, a Commission was appointed, composed of MM. Velpeau, Ricord, Devergie, Depaul, and Gilbert, to give an official answer to Government upon the question of the inoculability of the secondary syphilis, and whether the inoculability of that disease was different in the child and in the adult.

The following cases were officially reported :—

1. A patient, affected with lupus on the face, was inoculated on the left arm with some secretion from secondary mucous tubercles. The patient from whom the secretion was taken had a number of flat tubercles around the anus, which had existed for about a fortnight. These had followed a chancre on the penis fifteen months previously, the cicatrix of which was still apparent. Eighteen days after inoculation, a prominent copper coloured papule appeared on the inoculated spot. At the expiration of twenty-two days, the papule had enlarged, and discharged a moisture from its surface. On the twenty-ninth day, an enlarged gland existed in the corresponding armpit. On the thirty-second day, a scab having become detached, left exposed an excoriation still very superficial. On the fifty-fifth day, there was an ulceration, still superficial,

in the centre of the former papule, which, having become larger and more indurated, now constituted a well-formed tubercle ; some spots and red pimples shortly showed themselves on the body, and were followed by a general syphilitic eruption. Three months and a half after the inoculation, and after six weeks of mercurial treatment, a white superficial and slightly depressed scar was left on the arm ; the enlargement of the axillary glands continued, and the general syphilitic eruption was fading.

2. A patient, affected with inveterate lupus, was inoculated in the same way as in the preceding case. At the expiration of twenty-five days, some redness showed itself upon two of the inoculated points. Upon each of these spots a papule developed itself. This was at first dry, but subsequently discharged a fluid, and became excoriated, covered by a crust, and indurated. An enlarged gland, the size of a nut, developed itself at the same time in the axilla. The thirty-seventh day after the inoculation, roseola developed itself upon the skin.

The two preceding cases were inoculated by Dr. Auzias-Turenne ; the two following were inoculated by M. Gibert.

3. This case was very analogous to the two already mentioned ; but the papule produced by the inoculation was much smaller ; the induration which followed was less marked ; the ulceration which succeeded was superficial, round, and fungous ; roseola following in this as in the other cases.

4. The patient who furnished the secretion in this

case had been under the care of M. Puche, in the Hôpital du Midi. He had had an indurated chancre on the external surface of the prepuce, and this had left an indurated cicatrix, with slight indolent enlargement of the inguinal glands. Secondary mucous tubercles had formed on the scrotum, around the anus, between the thighs, and in other parts. A large, squamous papule existed on the forehead, of a coppery-red colour, quite dry, and of the size of a half-franc. On the 9th of February the point of a lancet was passed into the circumference of this papule, and was charged with some blood and serum. This was immediately inoculated on the upper and anterior part of the right arm near the elbow, in a patient affected like the preceding with lupus of the face. Fifty days after this inoculation, a prominent, red, irregular papule was seen upon the inoculated point. This had existed for fifteen days. It became the size of a half-franc, and was covered by a slight scab. It was, therefore, very similar in appearance to the affection from which the inoculated matter had been taken. During the whole of its course it did not become excoriated, and secreted no fluid. It therefore presented a well-marked instance of the second form of syphilitic infection noticed in a previous lecture. (See Plate III.) Around this papule were seen some copper-coloured and slightly raised spots; subsequently a squamous syphilitic eruption, and a variety of other syphilitic symptoms, appeared on other parts of the body.*

* This case may be compared with that of the boy related in Lecture VI.

It would be obviously improper, under any circumstances, to multiply the number of cases of artificial inoculation with this infecting variety of the disease; but other cases of the same kind are not wanting. The above have been selected as those recorded by a Commission, of which M. Ricord was himself a member; and there is, therefore, the best possible assurance that if these cases had in any respect been unsatisfactory, the weak points would have immediately been brought to light.

The following case, related by M. Guyenot, and quoted among others by M. Rollet, may be cited as a good illustration of the inoculability of the secretions of secondary affections.

Some matter was taken from the mucous tubercles around the anus of a patient, who eight months before had had an indurated chancre. This had been cicatrized for six months. Some of the matter was inoculated upon the arm of a boy ten years of age. Two days afterwards, no trace of the inoculation remained.

On the 4th of February, a very little red pimple, not raised above the level of the skin, made its appearance.

On the 5th, three little spots, each as large as a pin's head, showed themselves upon the inoculated part: these were not surrounded by any inflammation.

On the 7th, these spots were surrounded by a red areola. They were still superficial, and not accompanied by any induration.

10th. An inflammatory blush surrounded the inoculated spots, which now appeared as small ulcerations.

14th. The base of one of the little ulcers was thought to be hard; but this hardness was very slightly marked.

16th. The glands in the armpit were now for the first time perceptibly enlarged.

20th. The induration of one of the ulcers had much increased.

22nd. The edges of this ulcer had become raised, and its induration fully developed.

On the 30th of March, a characteristic papular eruption covered the patient's body and limbs, and for this he began a mercurial course of treatment on the 2nd of May.

Those who still oppose themselves to the idea of secondary syphilis being communicable, often ask for the same repeated demonstration of the fact as Ricord afforded with regard to the inoculability of the suppurating sore. But they who have requested this evidence can scarcely have seriously considered what they are asking. They ask, for the sake of satisfying their minds, and in order to correct their preconceived ideas, that a disease which necessarily produces its constitutional effects, should be, again and again, inoculated upon patients who had not previously had that disease—a proceeding which, if it were carried out for their satisfaction, they would probably be the first to condemn; nor, in truth, are any further experiments upon this point either necessary or justifiable.

The cases recorded in the present lecture show that secondary syphilis, under certain circumstances, is readily communicable, and that that communication,

when due precautions are not observed, may take place in the act of vaccination. In the next lecture some further illustrations of this great fact will be given, and some of the peculiar symptoms observed in the children at Rivalta will be more fully considered. The source, whence, in these cases, the original syphilis was derived will also be related.

LECTURE IX.

T W O F O L D I N O C U L A T I O N .

IT has been shown that the syphilitic disease was communicated at Rivalta to a number of patients by means of vaccination. A very important question now arises: Was it the syphilitic and the vaccine diseases which alone were thus conveyed, or that are liable to be so conveyed in future? Let us review the symptoms. We judge that the syphilis was conveyed with the vaccination, because syphilitic symptoms appeared. Did any other symptoms appear which belong not to syphilis, but to some other disease? Jenner* long ago remarked that variolous matter may undergo such a change, from the putrefactive process, as well as from some of the more obscure and latent processes of nature, as will render it incapable of giving the small-pox in such a manner as to secure the human constitution from future infection, although it is capable of exciting a disease which bears so strong a resemblance to it as to produce in-

* *On the Cow-pox*, ed. 1800, p. 83.

flammation and matter in the incised skin, swelling of the axillary glands, general indisposition, and eruptions; and he observes that this spurious action is often accompanied by more violent inflammation than that which occurs when the variolous matter produces its perfect effect upon the system.

Willan* also remarks that variolous matter improperly kept, or the thick matter taken from collapsed and scabbing pustules, when used for the purpose of inoculation, does not always produce the small-pox, nor prevent the future occurrence of that disease, although the persons inoculated may have had inflammation and suppuration of the arms and pains in the axilla, with fever and eruptions on the ninth or tenth day. In like manner, if the vaccine fluid employed be taken at a late period, it does not always produce the genuine cellular vesicle, but is in some cases wholly inefficient, while in other cases it suddenly excites a pustule or ulceration; in others, again, an irregular vesicle, and in others erysipelas. Similar appearances are occasionally observed when the lymph is taken at the proper time, and inoculated upon those whose systems are already under the influence of some disturbing cause.

The inoculation of decomposing lymph, or fibrin, or pus, from whatever source derived, may give rise to symptoms, both local and constitutional, similar to those which were observed by Jenner and Willan occasionally to follow small-pox inoculation and vacci-

* *On Vaccine Inoculation*, 1806, pp. 31, 32.

nation. If any of the decomposing fluid be taken up by the absorbents, inflammation and suppuration of the corresponding lymphatic glands may be produced ; but if taken up by the veins, and carried directly in the course of the circulation, symptoms of blood-poisoning will ensue.

One of the first cases which I had the opportunity of witnessing in private practice was that of a gentleman, otherwise in good health, who had a small fluctuating tumour on the leg, which was opened with a lancet, subsequently ascertained to have been shortly before used for the purpose of making an incision into a very foul abscess. There was here no inflamed lymphatic nor enlargement of the lymphatic glands, but the patient died in a very few days with the symptoms of contaminated blood. This case, which occurred many years ago, left a deep impression upon my memory.

Whenever any decomposing matter is taken up from the surface of a wound, from whatever cause originating, symptoms of blood-poisoning in a greater or less degree will manifest themselves.

CASE 1. A child had a slight operation performed for phimosis, and everything went on well until the fourth day, when the wound assumed an unhealthy character, and a blush of erythema appeared over the pubis. The same afternoon a similar blush, of a dark colour, gradually fading to the tint of the surrounding skin, appeared on the forehead. The patient died the next day.

CASE 2. About the same time that the preceding

case occurred, a gentleman had an operation performed in the perineum. No unfavourable symptom at first showed itself. After a short interval, however, he was attacked with an erysipelatous blush over the forehead, and this was followed by secondary inflammation of one eye, and death.

In cases of syphilitic ulcerations the same thing may occur. During the present year I had under my care at St. George's Hospital a child who had an hereditary syphilitic eruption on the skin. The symptoms suddenly changed, and a number of subcutaneous secondary abscesses formed in different parts of the body.

CASE 3. Harriet C., aged twenty, was admitted into the Lock Hospital on January 12th, 1861, having until within a fortnight previously been an out-patient at St. Thomas's. She stated that for eight months previously she had suffered from discharge, and had also had sores upon the labia. When she was admitted into the Lock, there was a sloughing ulcer within the vagina, and a sloughing bubo in the left groin. The parts around presented a dark erysipelatous blush, which extended over the right side of the stomach and down the right thigh. The erysipelas had at this time existed three days.

Jan. 13th. The erysipelas had spread rapidly, and extended over the back and thighs. It presented an ill-defined margin, the colour fading insensibly into that of the surrounding skin. She had suffered from diarrhoea during the night, and been slightly delirious.

Jan. 15th. The countenance was flushed and anxious;

pulse full and quick ; continual vomiting ; pain in the abdomen, with great tenderness on pressure over its lower part.

Jan. 17th. The erysipelas continued to spread with an ill-defined margin. The sickness continued ; no difficulty of breathing.

Jan. 18th. Pulse quick and very weak. She took very little notice of surrounding objects, except when roused. Pupils dilated ; no difficulty of breathing. She died in the course of the day.

Upon a *post mortem* examination, the superficial glands in the left groin appeared to have been quite destroyed by sloughing ; the lumbar glands were much enlarged, and of a dark colour. When cut into, several of them discharged a thick brownish fluid. The peritoneal cavity contained a quantity of turbid serum. The structure of the different organs throughout the body was perfectly healthy, with the exception of the kidneys, which were larger, softer, and more vascular than usual. The right auricle was filled with firmly adherent decolorized fibrine. This was continued into the right ventricle, where it also had contracted some very firm adhesions. From the right ventricle it was prolonged through the pulmonary artery (taking an accurate mould of the semi-lunar valves), into its smaller branches on both sides. (Fig. 1.)

The left auricle also contained decolorized fibrine in less quantity, and less firmly adherent, than on the right side. In the left ventricle was an elongated mass continuous with that in the left auricle, which, following the course of the circulation, extended for a

Fig 1.

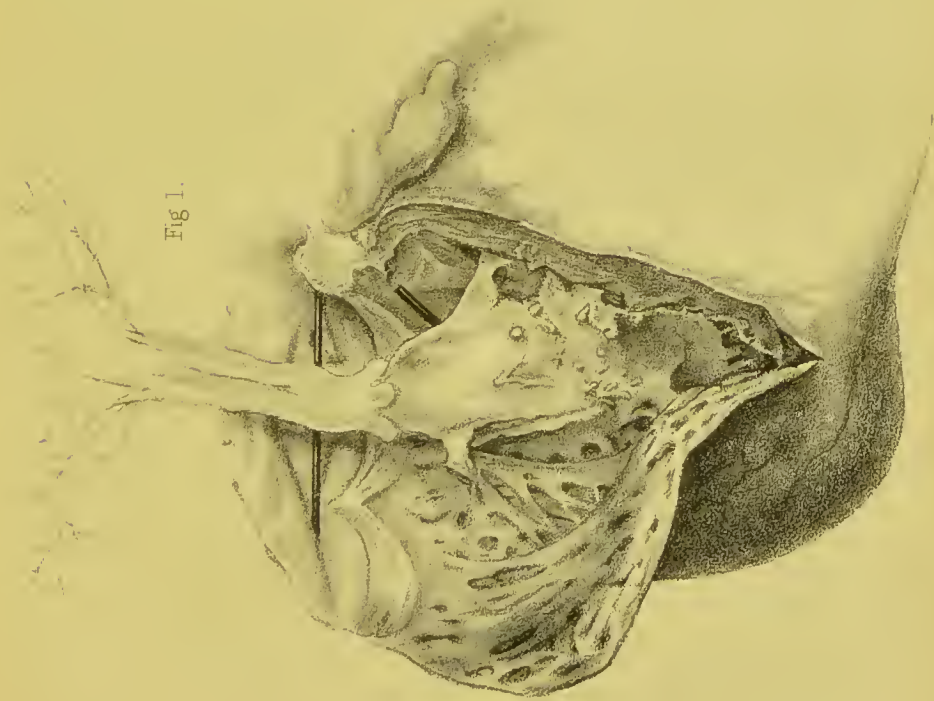
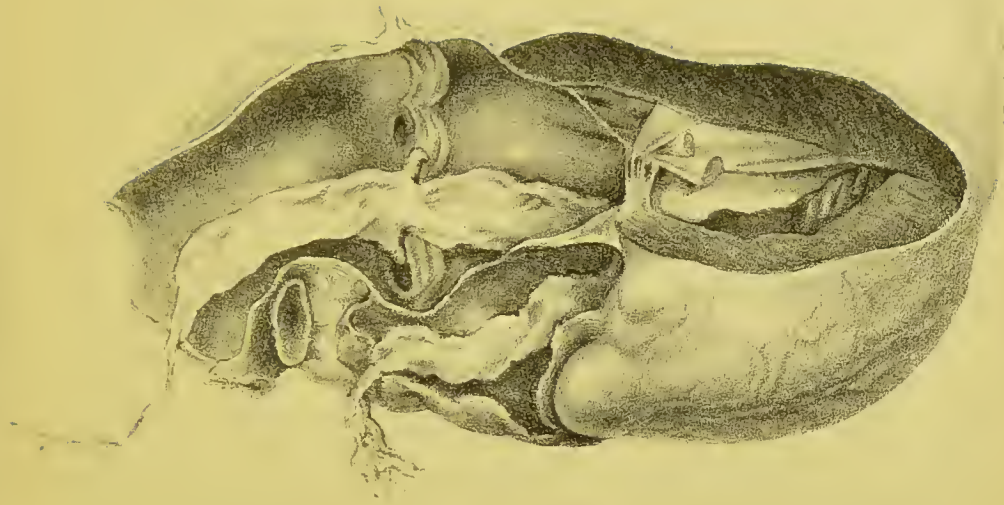


Fig 2



considerable distance into the aorta. As on the right side, the fibrine here retained an accurate mould of the semilunar valves. But perhaps the most interesting point about the case was, that continuous and adherent plugs of fibrine had been prolonged into both coronary arteries. (Fig. 2.)

In this case, then, the course of the disease could be sufficiently clearly traced. The destructive inflammatory action was continued from the original disease to the inguinal glands, where, in the very great majority of cases, it would have been arrested. But, these glands having lost their functions, the entrance of the morbid matter into the lymphatics beyond was no longer prevented. The door was forced ; and the diseased action was continued to the lumbar glands, which were themselves found to be in a state of imperfect suppuration. The right side of the heart, which first received the contaminated blood, was found to contain large masses of fibrine, deposited in consequence of the admixture of morbid products. This fibrine had evidently followed the course of the circulation to the smaller pulmonary arteries. On the left side, the deposit of fibrine was less, and of a somewhat different character ; but the results of the same diseased action were here fully shown.

That the deposition of fibrine in this case depended upon the direct admixture of morbid products (traced in their course towards the heart through the lumbar glands), I conclude to be demonstrated by the fact that exactly the same result may be produced by the mechanical introduction of some morbid secretion into

the blood. Several cases of this kind are published in the introduction to my *Pathological and Surgical Essays*. The results are similar, whether the morbid matter be introduced to the general circulation through the absorbents, through the veins as in ordinary pyæmia, or by artificial means. Specimens of the deposition of decolorized fibrine, adhering firmly to the heart and branching into the pulmonary arteries, may be seen from each of the above mentioned causes in the museum of King's College. From whatever cause arising, this clogging of the circulation on the right side of the heart is generally attended with intense difficulty of breathing, or rather, with a struggling for more breath than is supplied to the lungs. One reason for this doubtless is that, the right side of the heart and the pulmonary artery being partly obstructed, the quantity of blood sent to the lungs to be purified, bears an inadequate relation to the amount that is vitiated in the general circulation. It is the sense of the imperfect purification of the mass of the blood, that produces the gasping for breath which is so general in these cases.

But in the instance before us there was no particular difficulty of breathing. Now, this is accounted for, by both sides of the heart having been similarly affected. The circulation through the lungs was, no doubt, greatly interfered with ; but so was the general circulation through the body, and particularly through the heart itself ; so that the balance between the amount of blood vitiated and purified was tolerably well maintained. The patient then did not die, as is

usual in such cases, from imperfect oxygenation of the blood, but from the gradual obstruction to the general circulation.

The plugging of the coronary arteries, by which a due supply of blood to the heart itself was prevented, probably contributed in the greatest degree to the fatal result.

The short truneated plugs by which these were obstructed, are well shewn in the accompanying plate which appeared in the twelfth volume of the *Pathological Transactions*. The above are extreme cases of blood-poisoning from the absorption of decomposing matter, but the same disease may show itself in a great variety of milder forms. There is at present in the Lock Hospital a patient who, after a secondary eruption on the skin, has a number of subcutaneous abscesses in different parts of the body ; but her general health, though impaired, is not seriously affected. Now, in some of the cases recorded at Rivalta there were described soft tumours under the skin, erythema about the nates, gastro-enteritis, etc. Such symptoms do not certainly belong to syphilis, but they belong to a class of blood-diseases which can be artificially produced in animals by the injection of decomposing matter into the veins : and that which principally interests us at present is, that these same symptoms may be produced after impure vaccination as after impure inoculation from any other source. Vaccine lymphs, derived from unhealthy tissues, or allowed to remain in solution until decomposition has set in, will develop a degree of inflammatory action sufficient to prove

fatal. Bumstead relates an instance in the town of Westford, Massachusetts, in the spring of 1860, in which fatal results followed vaccination from scabs originally pure, but which were dissolved in water, and exposed to air and heat until they became decomposed.

The morbid actions which result in pyæmic affections may then be inoculated, as well as syphilis or the vaccine disease. It is true that they cannot be artificially produced with the same certainty as those diseases, nor, when produced, will they with the same degree of certainty contaminate the system. Yet, on every ground, all precautions should be used in order to prevent either local or general infection by this means. A great lesson, then, is here forced upon our consideration, one, probably, well known practically to the great majority of English vaccinators, but still one which recent events have shown it may be necessary from time to time to repeat. Whenever vaccination is performed, the lymph used should not have been left on the vaccinifer's arm sufficiently long to undergo any material alteration. It should not be mixed with the blood, even from the healthiest subject, because the blood will give it a tendency to decompose which the pure lymph naturally would not have.

In practice four very simple rules would appear to be sufficient to ensure safe vaccination.

1st. To use a clean lancet upon each occasion.

2nd. To take the lymph not later than the eighth day from the vesicle of the vaccinifer.

3rd. To take the lymph only, and not to allow blood, or other secretions, to be mixed with it.

4th. To obtain the lymph from a healthy subject.

Whenever, in the process of vaccination, any blood oozes from the puncture, some capillary tube is necessarily wounded. The process of repair in such minute vessels cannot, on account of their size, be accurately traced ; but there is no reason to doubt that the action by which their sides are re-united is the same as in the larger vessels. Here the mode of union may be traced accurately enough, and an instructive lesson may be learned by considering what takes place when a vein is wounded by a clean instrument, and how far that process may be altered by the use of a lancet containing on its point some decomposing matter, however small in quantity.

When the sides of a vein are simply divided, the blood which is effused in its cellular coat and in the surrounding cellular tissues, coagulates, contracts, and forms a bed in which the process of re-union goes on. The divided lips of the vein are by this means brought into apposition, and grow together, while the current of the blood is continued through the channel of the vessel. This process affords an excellent example of Hunter's "union by first intention" as distinguished from his "adhesive inflammation." Whenever a vein is wounded, the same "intention" is manifested, and more or less perfectly carried out ; but if a portion, however small, of decomposing matter be left in the wound, and mixed with the coagulated fibrin of the blood, it may impart its action to the material which

forms the bond of union between the divided edges of the vein. The union is then dissolved; the fibrin is disintegrated, and the wound opens. The edges of the divided vessel are no longer firmly united, and the process of decomposition may extend to the coagulated fibrin which held them together, or even to the interior of the vein. The product of that decomposition may then find a ready access to the circulation, and symptoms of either local irritation, or of constitutional disturbance, may speedily be induced. This may happen with a small vein as with a large one, and affords a sufficient explanation of the sore arms and constitutional disturbance which have not unfrequently been known to follow vaccination. Such symptoms must not for a moment be confounded with those of syphilitic inoculation, or with those which properly belong to vaccination. It is true that the vaccine lymph may decompose, or that the secretion from a syphilitic subject may undergo various chemical changes; and if these fluids be inoculated in that condition, they may then produce not only the disease to which they owe their origin, but also the symptoms of direct absorption of morbid matter into the blood.

In the cases at Rivalta the matter inoculated was professedly taken from vaccine vesicles; and that it contained the true vaccine poison was shown by the immunity that was induced in the little patients to any subsequent attempts at vaccination. But the secretion was also taken from syphilitic children, and it was moreover, before it was so taken, allowed to remain in hot weather sufficiently long to undergo

incipient decomposition. We have then here the ascertained causes of three distinct and separate diseased actions. The vaccine poison produced its natural effect, and when the children were revaccinated, it was proved that they were incapable of receiving the disease again. The syphilitic disease was communicated, as shown by the long list of cases which has been given ; and in addition to the symptoms which belong to these two diseases respectively, there were others, such as gastro-enteritis, erythema about the nates, and soft fluctuating tumours under the skin, which must be ascribed to the direct absorption of some products of decomposition.

Each of these three diseases has its own specific cause, is governed by its own laws, and is known by its own symptoms. Each appears at a different period after inoculation. The effects of the vaccine poison show themselves after the shortest interval ; those of the blood-poisoning after a longer period ; and the results of the syphilitic inoculation after a still longer interval.

The access of each of these diseases, when properly observed, is known by its characteristic symptoms ; and these should not be confounded with the symptoms of any other complaint.

When syphilitic inoculation takes place, it will manifest itself by one of the three forms described under the head of Syphilitic Infection in the second lecture ; and in children who have been vaccinated, as in other patients, we may affirm that no syphilitic disease has been communicated unless the symptoms of that

disease in their primary manifestations have been present. This remark of course applies to cases which have been properly observed, and the symptoms of which have been looked for at their proper period. After vaccino-syphilitic as after the natural inoculation of syphilis, the period of incubation, as far as the syphilitic disease is concerned, is from three to seven weeks ; and if the patient is seen for eight or ten days only, the symptoms will not be observed, even should they present themselves. When real syphilitic infection has taken place, the primary symptoms may cause very little inconvenience ; and the patients may not be brought for medical inspection. Of all the cases that happened at Rivalta, in none was application made to a medical man on account of the condition of the arm after twofold inoculation. Supposing proper inspection to have been made, we may affirm that in no case may vaccination be accused of having been the means of introducing the syphilitic poison into a patient's system, unless the symptoms of the syphilitic disease in one of its primary forms have been produced. If any question on this subject should arise, the medical man may with the same confidence appeal to the symptoms in this as in any other disease, and may be assured that he has never been the means of causing syphilitic infection of a patient's system if the symptoms of the specific primary adhesive inflammation in one of its varieties have not been present.

It has been made the subject of lengthened comment, that in the first vaccinifer of the Rivalta cases the vaccine vesicle appears to have run its natural

course, and left no unnatural appearance afterwards ; and the question naturally arises, How could syphilis have been introduced into this little patient's system without any appearance of primary disease on the inoculated spot ? It has been argued that if the disease had really been syphilitic, some primary manifestation of the disease must necessarily have presented itself. For a long time no satisfactory solution of this difficulty appeared. At length, on the 29th of March, Dr. Pacchiotti writes that he had discovered the real source of the syphilis in the first vaccinifer, Chiabrera, and that it now appears that the vaccine lymph contained in the capillary tubes sent from Acqui was not in fault.

Dr. Pacchiotti found out that about a year and a half previously a young woman (who said that she had been infected by a child from Acqui) had had constitutional syphilis at Rivalta, and he had ascertained that her symptoms continued some time before the vaccination at Rivalta. This woman was the mother of a child, which she suckled, and which died three months after its birth. It was reported by some to have died syphilitic, and by others to have been suffocated in its cradle. After the death of her child, she required her breasts to be drawn, and Chiabrera's mother undertook the office herself, and lent Chiabrera (the first vaccinifer) to the woman for the purpose. The woman, in return, gave Chiabrera her own child's clothes. The woman, whose name was Libérate, after the death of her child, went to live with her sister Mary, who also was suckling an infant. Libérate, in the absence of

her sister, suckled Mary's child. At the end of a certain time, not only was Mary's child infected, but Mary was herself infected through her own child. Now, as this nurse infected her own niece, it appears in the highest degree probable that she had also infected Chiabrera, whom she had nursed. All this took place two or three months before the vaccination of Chiabrera. That the woman Libérate and her sister and her sister's child were really affected with syphilis, is substantiated by a medical man at Aequi, who attended them. Subsequently Professor Sperino saw them at Rivalta with syphilitic symptoms. They are now, says Dr. Paechiotti, at Turin, as patients in the "Sifili-comio."

This may or may not be the true explanation of the way in which Chiabrera became syphilitic; but this does not affect the direct evidence with regard to the communication of the disease to the other children, and from them to their mothers and nurses. The great fact that, when proper care is not taken, syphilitic matter may be inoculated with the vaccine lymph, is further illustrated by the following narrative of Dr. Emanuel Marone:—

In November, 1856, Dr. Marone obtained some vaccine lymph from Campo Basso, the capital of the province, and vaccinated a number of children at Lupara, in Molise. The vaccine lymph was sent in glass tubes, and it was observed that it was mixed with a little blood, which affected its transparency. Dr. Marone says that he does not think it necessary to detail the symptoms of each individual case, as all the

children mentioned in the following account displayed nearly the same symptoms, and that therefore such an account would involve needless repetition. The disease with which these children were affected showed itself subsequently amongst the nurses and mothers, and even amongst the servants and others who were brought in contact with them.

The names of the children who were directly affected are as follows :—Filomena Listorti, daughter of Amadio and Antonia di Vista, of the age of eight months (this child was the vaccinifer) ; Anna Mastro-Giuseppe, daughter of Giuseppeniccola and of Anna Fiardi, aged nine months ; Filomena, daughter of Lisio di Angiolomichele and Maria Martino, aged nine months ; Francesco Salvatore, son of Vincenzo and Antonia di Paola, aged eight months ; Vittoria Gargano, daughter of Francesco and Concetta Giovanelli, aged ten months ; Giuseppe Riccardi, son of Francesco and Luisa Petrilli, aged ten months ; Francesco Fiore, son of Nicodemo and Anna Comatteo, aged seven months ; Francesco Marsilio, son of Michele and Angiola Cienzo, aged nine months ; Maria Giacomodonato, daughter of Felice and Michele Cienzo, aged nine months ; Maria di Cienzo, daughter of Giuseppe and Antonia di Paola, aged eight months ; Giovanni Martino, son of Domenico and Incoronata di Vito, aged eight months ; Nicola Lagatta, daughter of Pasquale and Emilia Fiore, aged seven months ; Luigi Fiorentino, son of Luigi and Vicenza di Santo, aged eight months ; Antonia Pelillo, son of Federico and Maria di Leonardo, aged eight months ; Giovanni Pelillo, son of Beniamino and

Angiola Tacopodonato, aged six months ; Angiola Dado, daughter of Pasquale and Vittoria Pelillo, aged six months ; Gennaro Antonarelli, son of Giovanni and Concetta Lanese, aged eight months ; Maria Fiardi, daughter of Luigi and Teresa Abbieri, aged eight months ; Felice Continelli, son of Domenico and Luisa Tacopodonato, aged six months ; Constantino Leonardo, son of Giovanni and Beatrice Santo, aged six months ; Concetta Pasquarelli, daughter of Niccola and Antonia Giovanelli, aged five months ; Teresa Giacomodonato, daughter of Francesco and Giovannina Vanelli, aged five months.

The number of these children, as may be seen, amounts to twenty-three. They came of parents who never had at any time previously shown any symptoms of syphilis ; moreover, their general health was good. The children likewise had never shown any symptom of syphilis, either congenital or acquired, previous to the vaccinations in question. The number of vaccinated children was not limited to these : there were some others, of whose cases notes were not preserved.

In some of the children vaccinated the vesicles died slowly away ; but afterwards ulcers appeared on the same spots surrounded by hard edges, and accompanied by multiple enlargement and induration of the axillary glands. These ulcerations lasted from a month to a month and a half, without any suppuration of the axillary glands. In other cases the vaccine pustules became covered with crusts, which remained an unusual length of time. These never became firmly cicatrized, and sooner or later reopened, assumed an

ulcerated appearance, and were accompanied by the usual axillary complications.

Finally, in some other cases, the first vaccinations not having succeeded, they were repeated, and the pustules which resulted from these subsequent inoculations ran a lengthened and irregular course. In all the children above named, sooner or later, but towards the middle of January, some form of constitutional syphilis developed itself. The symptoms consisted chiefly of eruptions of roseola, crops of papulæ, impetiginoid, and in a few instances pemphigoid, eruptions. At a later period, mucous tubercles appeared on the angles of the lips, on the mucous membrane of the mouth, around the anus, and on the vulva; the post-cervical and inguinal glands were affected; and the children were emaciated generally in proportion to the extent and severity of the syphilitic symptoms.

The breasts of the mothers who suckled these children became affected with ulcers varying in appearance, but always indurated. Some of these ulcers had the appearance of raised and ulcerated mucous tubercles; others were superficial and but slightly indurated; others, again, assumed the appearance of fissures: these were mostly on the nipple, or on the areola immediately surrounding it.

Some of these mothers presented a muco-purulent discharge from the vagina, and a similar discharge had previously been observed from some of the infected children. Few opportunities were afforded of witnessing the source of the discharge in the women, but in

two instances mucous tubercles were seen on the neck of the uterus.

Subsequently, and after the lapse of from five to eight weeks, many of the children had, in addition to the symptoms already mentioned, fresh eruptions of roseola, impetigo, psoriasis of the palms of the hands and soles of the feet, and ulcerations between the toes. Some of the women had at this time mucous tubercles about the mouth and genital organs. These women were also affected with chronic enlargement of the post-cervical and axillary glands, which became the size of hazel-nuts, but never passed into suppuration.

After the appearance of the above symptoms, the husbands of some of these unfortunate women became affected with the same disease. They first presented mucous tubercles with a certain amount of induration, which subsequently became ulcerated. These were observed principally upon the lips and angles of the mouth. In some cases ulcerated fissures with hardened base appeared upon the tongue. Between the fourth and eighth months from the first appearance of the disease the husbands had eruptions of the same nature as those which had previously affected their wives. At this period several of them had also characteristic mucous tubercles around the anus, on the scrotum, and on the prepuce.

The disease was observed to spread to other members of the different families, so that Dr. Marone remarks that he had children of both sexes who had not attained the age of puberty with hardened ulcers of the lips and tongue. In cases where these poor people

were crowded together in confined and neglected dwellings, whole families became affected with the disease. The same train of symptoms which have been already described as affecting the nurses and husbands, showed themselves in the other members of the respective families.

The treatment adopted was, mercurial frictions to the skin, and mercurial baths of corrosive sublimate. Corrosive sublimate was also in many cases given internally. Under this treatment the disease was greatly modified, and in some instances appeared to have been completely cured. But in the majority of cases the syphilitic symptoms, which at first yielded to the remedies employed, subsequently recurred, and in some instances the disease lasted in this way for upwards of two years and a half. Some of the children died, and apprehensions were entertained that a similar result might follow, in not a few cases, in the adults.

Many of the women who had been infected by their children, when they subsequently became pregnant, miscarried; others were prematurely confined with children, who subsequently became syphilitic; and in other cases, again, the children when born were exoriated, and already in a state of incipient putrefaction.

Some of the unfortunate patients who were infected by their own children, communicated the disease to the children of other people, through the medium of the breast. The following are the names of eleven nurses who in this way, without the slightest suspicion, com-

municated the disease to the children whom they nursed, and who had not been vaccinated :—

Maria Felice Carusella infected the child Anna Concetta Salvatore ; Angiola Benci infected Giuseppina Valente ; Emmanuela Lombardi infected Teresa Venitelli ; la Concetta Tudino infected Jacopo Ciccarelli ; la Maria Simeone infected Niccolo Pelillo ; la Carmina Bagnoli infected Pasqualina di Oto ; la Berenicie Ciccarelli infected la Maria Abbiero ; and la Stella Salvatore infected la Diletta D'Onofrio ; l'Antonio Altobelli infected Antonina Zarlenga ; la Concetta Darbano infected Beniamino Giacomodonato ; la Vicenza Principe infected la Teresa Giammaria.

The symptoms which appeared in these children were, mucous tubercles and ulcers of an indurated character, first on the lips, and then around the anus. These were followed by well-marked syphilitic roseola and syphilitic papular eruptions.

The two following observations are recorded particularly by Dr. Marone.

A child (L. S.), who had been successfully vaccinated in another part of the country, required a nurse. A woman was selected who at the time appeared healthy, but who in reality had been infected by her own child in the manner above described. Her child had received the disease by vaccino-syphilitic inoculation, and subsequently died. After the nurse had been with L. S. two months, there appeared on this child's mouth mucous tubercles and indurated ulcers, followed by an eruption of roseola over the whole body. The nurse, Dr. Marone ascertained, by personal inspection, to be syphilitic.

Giuseppina Simeone was infected from her own child as in the last recorded case ; and feeling on one occasion that her breasts were inconveniently distended, she had them drawn by her own sister, of the age of ten years. This girl (Teresa Valentini) became infected with syphilis ; she had mucous tubercles and indurated ulcers on the lips and tongue, and these were followed by the ordinary syphilitic eruptions. The disease lasted in this instance for upwards of two years. In some of the patients seen by Dr. Marone the syphilitic symptoms continued in children, nurses, and mothers until April 1859.

Previous to the outbreak of this terrible malady, Dr. Marone states that he had had no experience of syphilis among these villagers. "It is my duty in the cause of truth," he further adds, "to state fully that these inhabitants of Lupara were in nowise blind to the connexion between cause and effect on the occasion of this painful occurrence ; so that, in fact, I was pointed out as a guilty party in the catastrophe which had occurred ; and this is the reason why I was silent at the time, not only on my own account, but also for fear of discrediting one of the most important discoveries of our science. Vaccination was declared to be the foundation of all this misery. Now that I have seen that other surgeons have met with a like series of facts, whatever may happen to myself, I have disregarded personal considerations, and am no longer able to refrain from publishing the above-mentioned details, conceiving it to be a duty that I owe to science."

Dr. Marone draws the following brief conclusions from his most interesting and affecting narrative :—

That the syphilitic disease was really transmitted in the above-recorded cases by means of vaccination.

That the children vaccinated suffered first, and became the means of transmitting the disease to others.

That the lymph used for the purpose of vaccination was impure, being mixed with blood, and that the result shows how necessary it is to abstain from using lymph of that description.

The point that Dr. Marone here insists upon is also dwelt upon by Dr. Pacehiotti. It is important, he says, to remember that it is stated by the mother of Chiabrera (the first vaccinee in the Rivalta series) that during the time that vaccination was being performed, the blood was oozing from her child's arm, and that she complained of the circumstance at the time. Some of the mothers, whose children were then vaccinated, affirm that the lancet used was stained with blood. It is true that some of the children which were last vaccinated remained free from contagion, and some of those who were infected were amongst those who were vaccinated the first. This circumstance Dr. Pacehiotti considers may be explained by considering that the lymph drawn from different vesicles was used for the purpose of vaccinating different children, and that some of these vesicles furnished blood, and some did not.

In the cases recorded by M. Lecoq of Cherbourg, the same circumstance of blood having been taken with the vaccine lymph was remarked. An abstract

of these two cases is here given, as they illustrate well the subject of twofold inoculation, and also because they have been misquoted on more than one occasion.

On the 4th of May, P., aged twenty-five, was revaccinated in accordance with the regimental regulations. The vaccine virus was taken from the arm of another soldier, who three months previously had had an infecting chancre. Abortive pustules only were produced. At the expiration of eight days there was a slight irritation only where the punctures were made. After some additional days, a slight ulceration appeared, which increased and assumed a violet colour. Its base became indurated, and was accompanied by indolent enlargement of the axillary glands in the armpit of the same side. Constitutional syphilitic symptoms followed.

Another soldier, vaccinated shortly after from the same source, had a series of symptoms of exactly the same nature, and these, as in the previous case, resulted in confirmed syphilis.

These two patients had never had any other syphilitic disease. They were the last of a number who were vaccinated, and the gentleman who performed the operation recollected afterwards that at the time he vaccinated these patients he had exhausted his supply of vaccine lymph, and had taken up a little of the blood of the part upon the point of his lancet.

LECTURE X.

INOCULATION OF THE BLOOD OF SYPHILITIC PATIENTS.

IN the last lecture, four very simple rules were given with reference to the mode of performing vaccination. These were—

1. That a clean lancet should be used.
2. That the lymph should be taken from the vaccinator not later than the eighth day.
3. That lymph only should be so taken, and that it should be without admixture of blood, or of other secretions.
4. That the lymph should be taken from a healthy subject.

These precautions are such as would naturally suggest themselves to every practical vaccinator. The third rule is, however, of much greater importance, as far as the transmission of syphilis is concerned, than any of the others. In all the instances which have been given in which vaccine-syphilitic inoculation occurred, some blood, or bloody fluid, was mixed with the vaccine lymph. As far, then, as our present evidence goes, if the third rule be accurately observed, the others, however important in other respects, are of

little consequence so far as the actual transmission of syphilis is concerned. The pure vaccine lymph, it would appear, will produce only the vaccine disease, although that lymph be taken from a patient suffering from syphilis, or even from small-pox.

In this respect, the law laid down by Hunter seems to be confirmed—namely, that no two actions can go on in the same part at the same time. We have, indeed, abundant evidence, even from the cases that have been recorded in the present course of lectures, that different diseased actions may go on in close proximity to each other, or that they may succeed each other upon the same spot. Thus, after twofold syphilitic inoculation, we may have a soft chancre first produced, and after the natural period of incubation, the indurated or infecting chancre may appear upon the very same place ; or, under the same circumstances, we may have the superficial surface of a sore affected with the suppurative inflammation, while the deeper layer may be the seat of the specific adhesive action. These two morbid processes may go on at the same time, the one being the result of the local suppurating disease, the other of the infecting form of syphilis. Although these two diseases may be in such close proximity to each other that their secretions may be mixed together, yet it is probable, as Hunter has said, that the very same part cannot be affected with the two different morbid processes at the same time.

This subject has been illustrated in a very interesting manner by a case given in the *American Medical Times* for the 29th of March last.

A gentleman and his wife, with a daughter three years old, left their hotel in consequence of the appearance of the small-pox. They went to Detroit, and the child was vaccinated the day after, with recent and active lymph. The formation of the vesicle progressed so naturally that it was supposed that the child's constitution was protected against the small-pox. At the request of an intimate friend of the family, some lymph was taken from the vesicle on the daughter's arm, and inserted into the arm of another child. On the second day after this, the small-pox appeared on the child originally vaccinated. All the parties concerned now became exceedingly anxious to know what the result of the vaccination would be on the second child. "To our great satisfaction," observes the vaccinator, "it proved to be only a benignant case of vaccine disease, which acted with ordinary mildness."

In this case we have the vaccine vesicle matured amid the fermentation of the genuine variolous fever, and yet the product of that vesicle, when inoculated, produced the vaccine disease only. Now, as the syphilitic poison is certainly not more contagious than the poison of small-pox, we may conclude that, had the first patient been suffering under syphilis at the time that the vaccine vesicle was matured, and had the vaccine lymph only been taken from that vesicle and inoculated upon another patient, the vaccine disease alone would have been communicated.

The same author who relates the above-mentioned case also gives the following :—

“On a day that could be specified, an inmate of St. Mary’s Hospital was exposed to a contagion of small-pox. Two days after this came to my knowledge he was vaccinated. The vaccine vesicle filled upon the tenth day. On the twelfth, when the small-pox eruption was pretty full out on the face, the vaccine vesicle was punctured, and the lymph which flowed was transferred to the arm of a healthy adult. The effects produced by this lymph were such as we ordinarily see when the matter used is taken from an adult of good constitution, and in vigorous health. Others were vaccinated with the matter thus produced, and in these cases there were no peculiar symptoms.”

In like manner we may suppose, if a specific syphilitic pustule were formed upon a patient previously constitutionally syphilitic, and if the pus only were taken from such a pustule, and inoculated upon a person who never had had syphilis, that a specific pustule, followed by a local suppurating sore, alone would be produced ; but if, in such a case, some blood from the syphilitic patient were to become mixed with the pus so taken, or if the secretion from some form of secondary disease were to be mixed with that of the specific pustule, then that a twofold inoculation might result. The communication of syphilis by means of the blood, and by means of the secretions of patients suffering from secondary forms of the disease, are subjects of so much interest that they demand a separate consideration.

Dr. Galligo, the talented editor of the *Imparziale*, has published recently an account of some most inter-

esting experiments, performed to illustrate the first of these points.

Professor Pelizzari, in 1860, inoculated two students of medicine with the blood of a patient affected with constitutional syphilis. The results of these experiments were negative. On the 6th of February, 1862, he again inoculated Drs. Bargioni, Rosi, and Passagli, with the blood of a patient named A. T., aged twenty-five, affected with constitutional syphilis, and who had not as yet been subjected to any specific treatment. The blood in this case was drawn with a new lancet from the cephalic vein. The patient was suffering from numerous confluent mucous papules on the left labium, towards the inferior commissure, corresponding to the point at which the primary lesion had appeared. There was in this situation a mucous tubercle developed upon the indurated cicatrix of a primary sore ; or else the indurated primary sore had become transformed into a mucous tubercle. Mucous tubercles surrounded the anus. The inguinal glands were indurated and enlarged. A confluent syphilitic eruption existed upon the body, and there was enlargement of the posterior cervical glands. There were also pustules on the head. The blood was taken from the patient's arm, at a part where there was no sign whatever of any eruption. The arm of the patient was washed, and the surgeon washed his own hands. The bandage and vessel destined to receive the blood were new. As the blood was flowing from the cephalic vein, some of it was received on some lint, and this was placed on the upper part of Dr. Bargioni's left arm, where the

epidermis had previously been removed, and three transverse incisions made. This point corresponded with the insertion of the deltoid muscle. The same operation was performed upon Drs. Rosi and Passagli; but in the case of Dr. Rosi the blood was already cold when it was applied, and in the case of Dr. Passagli the blood had coagulated.

After the lapse of twenty-four hours, upon removing the dressing, nothing was observed at the seat of the inoculation in Dr. Bargioni's arm except a slight crust formed by the effused blood at the seat of puncture. At the same time the dressing was removed from the arms of the other two physicians, and nothing was seen worthy of observation. Four days afterwards every trace of the different inoculations had disappeared.

On the morning of the 3rd of March, Dr. Bargioni announced to Prof. Pelizzari that in the centre of the inoculated surface he had noticed a trifling elevation which produced a little itching. Prof. Pelizzari examined the arm, and found, at the point indicated, a small papule, of a roundish form, and of a dull-red colour. There was then no induration at the base of the papule, nor any enlargement of the corresponding axillary glands. To prevent its being rubbed, it was covered with some dry charpie and diachylon. Prof. Pelizzari examined it daily. On the eighth day the papule had augmented to the size of a twenty-centime piece. On the eleventh day it was covered with a very thin adherent scale, resembling silver paper, which, upon the two succeeding days, became denser and less adherent, and in its central part commenced

to crack. On the fourteenth day two axillary glands became enlarged to the size of nuts, and were moveable and indolent. The papule remained indolent, but its sensibility was slightly increased. On the 19th, pressure upon the crust caused a small amount of sero-purulent matter to exude from beneath its edges, the pressure giving a little pain. The axillary glands had now become larger and harder, but continued indolent. There was no induration apparent at the base of the papule. On the 21st the scale was transformed into a true crust, which had commenced to be detached at its edges; and the part beneath was ulcerating. Slight induration now appeared at the base. On the 22nd the crust was detached, and a funnel-shaped ulcer presented itself, with elastic and resistant borders, forming an annular induration. These edges were swollen, adherent, and obliquely inclined towards the base of the ulcer, which was covered with a very small amount of secretion. The pain was trifling. Dry charpie only was applied. On the 26th the ulcer had extended itself to the size of a fifty-centime piece. It secreted more, and the surrounding induration was considerably increased. Up to the 4th of April this ulcer remained stationary, but at that date its base appeared to be granulating. The corresponding glands remained swollen, hard, and indolent. There appeared at this date trifling nocturnal pains in the head, and the posterior cervical gland became somewhat enlarged. On April 12th there appeared upon the surface of the body, particularly upon the sides of the chest, and in the hypochondriac regions, spots of irre-

gular form and of rose colour, unattended by any inconvenience to the patient. The glandular swellings of the neck were well marked. This eruption extended itself, and became more confluent during the succeeding days. No constitutional disturbance, heat of skin, nor pruritus, accompanied this eruption, which went on increasing for eight days. On the 20th the cervical glands had increased in size and were harder. The chancre maintained its specific character, and exhibited no tendency to cicatrization. On the 22nd the colour of the eruption was decidedly coppery. Small lenticular papules were now perceived to be mixed with the erythema. The edges of the chancre had begun to granulate. Mercury was now commenced.

Dr. Galligo justly remarks that the case of Dr. Bargioni is more important than that recorded by Waller, not only on account of the greater precautions used, but because the blood in Waller's case was taken from a woman whose skin *was covered entirely with a syphilitic eruption*, whereas the blood *was drawn from a part of the integument free of any eruption in Bargioni's case*.

In Waller's case, the person inoculated suffered from *lupus exfoliations*—i.e., from a *cutaneous malady*. In the case of Dr. Bargioni, the blood was introduced into the system of a person *perfectly healthy*.

In Dr. Bargioni's case mention is made of the characteristic enlargement of the axillary glands; while in Waller's case no mention is made of any enlargement of inguinal, or crural glands, having accompanied the papule which followed the inoculation.

The inoculations of Waller did not take place upon a physician ; those of Pelizzari were made upon five physicians, who could certainly observe the phenomena with a perfect cognizance of their cause : so that what was wanting in Waller's case (important as it was) has been fully supplied in that of Dr. Bargioni ; and the fact must always remain incontestable, that the blood of a syphilitic person may be inoculated so as to produce syphilis in a healthy subject.

The facts and observations, derived from independent sources, which have now been given, coincide in a remarkable manner with those recorded by Dr. Pacchiotti in that most interesting series of cases which he has observed at Rivalta. We can have, therefore, no hesitation in adopting his conclusions with regard to those cases :—

1. The malady observed in the children at Rivalta was certainly syphilis. This is proved not only by the syphilitic symptoms which were noted—not only by the results of the specific treatment employed—but also by the transmission of the diseases from children to their mothers.

2. It is certain that the syphilis was transmitted to the children through vaccination, because all the children manifested the disease at the same time. Although vaccinated in two series, the same phenomena appeared. The vaccine pustules were changed into syphilitic ulcers in the children who had previously enjoyed good health. It is impossible to believe that in the same country, at the same time, forty-six children should be born with hereditary syphilis from syphilitic parents,

and that the disease should burst out in all of them at precisely the same period, although they were of different ages.

3. Forty-six children became syphilitic out of sixty-three who were vaccinated—*i.e.*, more than two-thirds in a small village of two thousand souls. This is a very large proportion.

4. There is, perhaps, no recent example of so great a number of deaths either by want of proper treatment, or from the violence of the disease. Here we have seven deaths out of forty-six infected children ; and although, most unfortunately, there were no autopsies, still, from all that we have heard narrated, it seems probable that death happened either from syphilitic cachexy, or from some other disease arising therefrom.

5. It is important to note the number of mothers and nurses infected by syphilis—twenty-six out of forty-six ; and this number is equivalent to nearly the whole number of mothers suckling, if we take away those who did not suckle, those whose children died soon after the infection, and those who left off suckling before the vaccination. It is worthy of observation that the mother of Chiabrera, like all the other mothers, presented a train of syphilitic symptoms—beginning with two ulcers on the nipples, and followed by constitutional disease.

6. The contemporaneous existence of the two series of vaccinated, and of syphilitic, individuals demonstrates that in the first as well as in the second series the vaccine vesicles, on the tenth day of their evolution,

were the means of transmitting syphilis, as well as the vaccine disease. Here are two contemporaneous experiments which confirm each other, running their course in the same locality, under the same conditions, and at the same period.

7. It is worthy of note that the two vaccinifers (Chiabrera and Manzone) transmitted to the others the same disease, each on the tenth day of the evolution of the vaccine vesicles.

8. In this case we have been able to trace step by step the progress of the syphilis, transmitted constantly, and without interruption from Chiabrera to the various children, from the children to their mothers, from the mothers to their husbands.

9. Syphilis communicated from the children to the mothers is a manifest proof that the mothers were healthy before this event—that is to say, were not syphilitic, and consequently could not have given the disease hereditarily to their children. No one can give that which he has not. The syphilis transmitted from five mothers to their husbands is a new and palpable confirmation of the same truth. It is almost a general rule that constitutional syphilis only infects once the same individual. It is therefore almost proved, from this circumstance alone, that these five fathers were previously healthy, and that their children were not syphilitic before the vaccination.

10. It is strange, but still must not escape remark, that syphilis was transmitted to one brother and two sisters of the children who were continually with them. These children were constantly eating and drinking

together, and kissing each other. It appears that syphilis was in these instances transmitted by the mouth.

11. It is remarkable that the first manifestation of the disease almost constantly appeared in the form of the indurated syphilitic ulcer. This was seen clearly enough, first in the arms of those vaccinated; afterwards on the breasts of the mothers; subsequently on the genital organs of the husbands; lastly, on the mouths of the two brothers, and on the forearm of the sister. It is the first time that anyone has so completely caught nature in the act of demonstrating, on so large a scale, her uniform mode of operation.

12. The contagiousness of the secondary symptoms of syphilis from the mouths of the children to the breasts of the mothers, from the genital organs of the mothers to those of the fathers, from the mouths of the children to the mouths of their brothers, is sufficiently demonstrated. We may now perceive how, by means of these different modes of transmission of secondary syphilis, various epidemics may arise, and we have the explanation of certain facts which of old seemed strange and impossible. Thus in Rivalta eighty patients were affected with syphilis, including children, mothers, husbands, brothers, and sisters.

13. It is important to remember that it is averred that blood issued from the vesicles of Chiabrera during the act of vaccination, and that the lancet used was impregnated with blood during the operation.

14. Revaccination practised on five of the children seven months afterwards did not give any result,

although it was performed with the greatest care. It is thus a settled question that the vaccine lymph and the syphilitic virus were contemporaneously inoculated into the organism of the infants, and produced their natural effects without interfering with each other. Every one must see how important such facts are.

15. The dates of the development of the syphilis are clear and manifest. Hence it may safely be affirmed that the vaccine vesicles, terminating at the end of the third week, gave place to the syphilitic ulcers, which appeared after their natural period of incubation ; and when these ulcers began to heal, then appeared the various forms of secondary syphilis which we have been describing. This was the period at which appeared the vesicular syphilitic eruptions which, bearing a resemblance to small-pox, spread alarm through the country and attracted the attention of the profession. Syphilitic ulceration of the arm, with enlargement of the axillary glands, were the first symptoms observed. The secondary forms of syphilis then appeared, and of these traces were found at the fourth month, and they lasted till the seventh month. In the mothers these two periods in the development of syphilis were particularly observed. After a shorter or longer incubation, the syphilitic ulcer appeared on the breasts, with accompanying enlargement of the axillary glands ; then, after a second period of incubation, secondary syphilis, in its various forms, manifested itself.

16. In a comprehensive view of so many syphilitic patients, we see gathered together in a small district all the forms of the secondary disease, in every age, in

all temperaments, in various constitutions in the two sexes ; upon the skin, upon the mucous membranes, in the lymphatic system, on the genital organs both in men and women, in the neighbourhood of the anus, on the lips, in the cavity of the mouth, in the nasal fossæ, and on the surface of the scalp. The disease was observed in all its stages : in its beginning, its increase, and its decline.

17. The syphilis at Rivalta had its origin in the vaccinifer Chiabrera, who contracted the syphilis, two or three months before vaccination, from the breast of a syphilitic woman, who infected at the same time another child—her nephew. This syphilis was transmitted by him to the rest by means of the said vaccination.

18. To the general rule there are some few exceptions, which ought also to be studied. In some syphilitic children the vaccine cicatrices did not present any irregularity. In one syphilitic mother there was no induration on the breasts, and in some mothers there were ulcerations on the breasts, although the children manifested nothing in the mouth.

19. The facts recorded at Rivalta are important with reference to a grave medico-legal question that has often been proposed to physicians—viz., whether syphilis can be transmitted from nurses to children at the breast, and from children to their nurses ; and, in cases where both are infected, whether we can say who first had the disease—the mother, the child, or the nurse. Here, at Rivalta, the natural progress of the disease might be observed in its successive stages ; and so many experiments were performed, so to speak,

which afforded the evidence necessary for the solution of these difficult questions. In the same manner other medico-legal questions that have arisen concerning the transmissibility of syphilis from brothers, sisters, parents, or servants, receive great light from the details which have been recorded.

20. The occurrence at Rivalta has brought into prominent relief another very important question, and has indicated the advance in civilization of the Italian people. It is a question of very grave interest to the medical profession whether a medical man is legally responsible for the transmission of syphilis, if he has accidentally communicated the disease by having taken lymph from a syphilitic child. The Piedmontese physicians were unanimously of opinion that a medical man was not legally to blame under such circumstances, and the Italian government endorsed their verdict. The Italian people may well be proud of this monument of civil progress, when the conclusion at which the government arrived is compared with the proceedings which were taken in Bavaria, in 1853, against Dr. Hübner, who in a similar case was tried, and condemned to prison.

21. But the circumstances now reported enforce upon the profession the greatest care in preventing the possibility of the recurrence of any similar accidents. When governments insist upon the necessity of vaccination and revaccination, it surely is incumbent upon them to appoint duly qualified men to perform that duty, and to remunerate them in a manner which shall remove from the public mind even a suspicion of its not being properly performed.

LECTURE XI.

 SYPHILITIC INOCULATION MODIFIED BY THE HEREDITARY
TRANSMISSION OF DISEASE.

THE cases and experiments recorded in the previous lectures all go to show that the blood of syphilitic patients, and the secretions derived from secondary syphilitic affections, are, under certain circumstances, inoculable upon persons who have not previously had the disease. Cases and experiments which at first sight would appear to lead to a directly contrary conclusion, are, however, not wanting. The following are mentioned by Dr. Sarrhos, and are reprinted by M. Fournier in the last edition of Ricord's "*Leçons sur le Chancre*":—

Dr. Rattier, who had never had syphilis, was inoculated several times with the secretion from all the forms of secondary symptoms, without any disease being communicated. These experiments were performed fifteen years ago.

In 1852, M. Cullerier, who had never had syphilis, inoculated himself a great number of times at the Hospital Lourcine with the secretion from secondary symptoms, and always without result.

Dr. Sarrhos himself, who had never had syphilis, was inoculated some thirty times with the secretion from several different forms of secondary disease in July 1852. In June, 1853, he writes that he had not had any syphilitic symptom, although he had done nothing by way of treatment to prevent their occurrence. The following is an abstract of some of these experiments :—

1. Inoculation of the secretion from a secondary ethymatous pustule on the forearm. A very slight inflammation developed itself upon the punctured spot. This completely disappeared in some days, and was followed by no other symptoms.

2. A syphilitic patient had on the upper lip a large spot of rupia. From a crack in the scab some secretion was taken, which was inoculated upon the patient, upon a physician who had had syphilis, and upon Dr. Sarrhos himself. Dr. Sarrhos with a pin inoculated himself in three places in the forearm ; the punctures were made to different depths. The result was negative on the patient, negative on the physician who had had syphilis, and negative on Dr. Sarrhos who had not.

3. Dr. Sarrhos inoculated himself with the pus taken from some secondary mucous tubercles. Some redness of slight extent showed itself around the puncture. This disappeared in a few days without being followed by any other, either local or constitutional, disease.

4. The secretion from mucous tubercles was again inoculated as in the last-mentioned case. Slight inflammation, with itching, followed ; but there was no suppuration, ulceration of the skin, induration on the spot, nor affection of the inguinal glands.

5. A double inoculation was performed with the secretion from a syphilitic ulcer on the tonsil, and from a specific ulcer on the leg. In both cases the result was negative.

6. Dr. Sarrhos made six punctures on his own forearm, extending to different depths, with a lancet charged with the secretion from the ulcer on the leg, from which the matter was taken in the last experiment. Slight inflammation was produced ; but this was probably due to the little wounds made by the lancet. A few days afterwards every symptom had disappeared.

Twenty-four other similar experiments are related with like results. Dr. Sarrhos remained free from any syphilitic symptom at the time of their publication.

These experiments, undertaken in such good faith, and carried on with so much perseverance, appear at first sight to contradict the notion that the secondary forms of disease are communicable by inoculation. But before we arrive at the conclusion that the various series of experiments, which have now been related in this, and in former lectures, do indeed contradict each other, two important questions present themselves for consideration : 1st, how far the inoculability of the secretions from secondary affections, or of the blood from syphilitic patients, may be influenced by the period of the disease at which the diseased fluid is taken ; and, 2ndly, how far such inoculations may be affected by hereditary disease or predispositions on the part of the recipient.

1. Syphilis, in all its stages, becomes developed after a certain period of incubation. This is manifest after

the first inoculation of the disease. After a second period of incubation the constitutional symptoms will present themselves. These may disappear; but after a certain interval they will again show themselves, in perhaps some different, or modified form. The disease may thus continue for years, showing increased vitality at intervals, with longer or shorter periods of comparative inactivity.

Now, as the lymph from a vaccine vesicle would produce its natural effect much more certainly when taken at the time when its specific action had become matured, than while it was either in a nascent or a declining condition; so has the primary chancre certain periods during which its secretion is more readily inoculable than at others. Again, with regard to the secondary forms of the disease: as we find that after a period of inactivity the symptoms will reappear with fresh vigour, so we may reasonably suppose that the blood would be most likely to be inoculable upon another person at that time, when a fresh development of disease is about to appear in the infected person; and that when the secondary symptoms had recently appeared, they would be more likely to furnish an inoculable secretion than at any other period. It is important, therefore, to consider, in connexion with any experiments upon the inoculability of secondary syphilis, the phase of the disease at which the inoculated fluid has been taken, and the duration of the symptoms.

2. By far the most important question, however, remains,—namely, the effect of hereditary influences

in preventing or modifying the actions of the inoculated fluids. If it be true that a patient is generally liable to syphilitic infection once only in his lifetime, the question presents itself with much point, in relation to our present subject, how far a person who has had syphilis by hereditary transmission is protected from any fresh attack of the same nature. Several cases have lately come under my notice in which the effects of hereditary syphilis have at intervals manifested themselves until the patients were approaching puberty; and it is more than probable that if the visible effects of the disease can remain so long in a patient's constitution, its more subtle and secret influences may continue to a much later period. It is a point of very grave moment to determine how far such an influence derived by hereditary descent may have the same effect in preventing the reinoculation of syphilitic matter, as it is well known that acquired syphilis has.

Whatever may have been the cause of the failure of the inoculation, where the products of secondary syphilitic affections have been artificially introduced into the system of those, who were said not previously to have had the disease, it is obvious that one link in the chain of evidence has hitherto been wanting in those cases.

In order to be of any real value in demonstrating the non-inoculability of secondary syphilis, it would be necessary to show that the patients upon whom the experiments were made were susceptible of *primary* syphilitic inoculation. If in any case it were found

that a patient showed no syphilitic symptoms after being repeatedly inoculated with the secretions from secondary syphilitic affections, and if afterwards the inoculation of the secretion from a primary infecting sore gave rise in him to an infecting chancre, then we might say that such an experiment was of some value in proving the non-inoculability of secondary disease. But until the susceptibility of a patient's constitution to syphilitic infection from *any* source is thus demonstrated, the negative evidence derived from his not being susceptible to infection from any particular form of disease, is of little moment. If such a mode of reasoning were admitted as is implied by the experiments mentioned in the first part of this lecture, it would be very easy to prove by the same means that primary syphilis was not inoculable with the lancet.

Among those who habitually expose themselves to syphilitic infection, it occurs every now and then that an individual is found who never has had the infecting form of the disease ; and the question naturally arises — Why he has not suffered in the same way as others who have been similarly exposed ? The answer which would generally be given to such a question would probably be, that it depended upon some peculiarity in the person's constitution. But we are bound, if possible, to ascertain and determine, as far as may be, what that peculiarity of constitution is. It has lately been said that such an immunity may be acquired by the repeated inoculation of the suppurating form of the disease. The fallacy of such a supposition in a theoretical point of view has already been shown in the first

of the present series of lectures. The observation of cases as they occur in practice equally shows that such an idea is unfounded. It will frequently happen that a patient will have several suppurating sores in succession without any constitutional disease, and then he will contract an infecting sore just in the same way as if he had not previously had any kind of venereal affection. Upon what, then, does this immunity to syphilitic infection which obtains in some persons depend? If we say that a patient can have syphilis once only during his lifetime as a rule, and if we find that a certain number of children have hereditary syphilis, does it not appear probable that these children, when they grow up, would have some kind of immunity from further infection; or that, if the disease did appear again in them, it would be in a greatly modified form?

Modern researches in this branch of science bring us back to that which shrewd observers, without the advantages which we at present possess, had long ago noted. In 1812, Dr. Ferguson came to the conclusion that syphilis had become so much mitigated in Portugal, by reason of general diffusion or other causes, that after running a mild course it exhausted itself, and ceased spontaneously. Dr. Ferguson further mentioned that he had reason to believe that at that time, in other countries, the disease had become modified in a similar way. He mentions that in certain German regiments, and in some districts of the Russian empire, the medical attendants had found that mercury was not necessary for the treatment of syphilis, and that in

the patients to whom he referred, the disease, from being allowed to run its course probably for ages, had become as weak as it was found to be in the Portuguese. All adventitious diseases, says Dr. Ferguson, that are not connate, endemic, nor sporadic, appear more or less to run this course of exhausting themselves while retained upon the same ground to which they have been transplanted ; but let the field be changed, and fresh sources of development be presented, and they will instantly resume their primary powers, and, taking a fresh departure of violence, repeat the almost forgotten inflictions of their original visitation. The powers which they thus acquire bear some resemblance to a phenomenon which is everywhere observable in the vegetable kingdom. The same species of seed may be sown upon the same ground until it shall so degenerate in point of vigour, as to become almost incapable of reproducing itself ; but let it be changed to any other kind, though even of far inferior quality, and it will immediately display new powers of life, and fructify and vegetate with its native strength.

Corresponding with this description appears to have been the effects the inoculation of the exhausted syphilitic virus of Portugal (though evidently the same disease) into the constitution of the British or other strangers. It was in some measure new, therefore unfriendly, and seems to have had the power of exciting new actions of more than ordinary violence.

The Portuguese, through apathy, and at a dreadful price levied on the generations that are passed, and never in all probability to be redeemed by their descen-

dants, appear to have gained a great exemption from both syphilis and variola ; but the price is too high for us ever to offer up our bodies to be the unresisting subjects of disease, the fatal consequences of which, though they might go far to extinguish one or two ills, would be felt in the deterioration of our race to the most distant ages.

The same facts, with regard to the modified form in which syphilis appears in some of the lower classes of the community, have been observed in our own country.

Mr. Rose, formerly surgeon to St. George's Hospital, found from experiments conducted at one time on a large scale in one of the regiments of the guards, that he could treat syphilis when it appeared amongst the common soldiers by topical applications alone. It is true, that at the time Mr. Rose conducted his experiments no clear distinction was drawn between those syphilitic affections which, if left to themselves, would infect the constitutions of the patients, and those which would not ; and, therefore, a great many sores were, no doubt, said to be cured without mercury which, under no circumstances, would have been followed by secondary symptoms. It is exceedingly probable, however, that a certain proportion of the cases treated by Mr. Rose really depended upon the infecting variety of the disease ; and as Mr. Rose found that he could deal with these cases without administering mercury, we can only conclude that the disease he was treating had appeared in some modified form, such as Dr. Ferguson had noticed in Portugal, and such as he states

to have existed also in Germany and in Russia. As soon as Mr. Rose tried his plan of treating syphilis without mereury amongst the officers of the regiment in which his experiments had been made, the plan was found to be unsuecessful ; and we have the authority of Sir Benjamin Brodie, who witnessed these experiments, for stating that, in private, Mr. Rose treated syphilis with mereury like other medical praetitioners ; and that in eases where he did not administer it, he was continually becoming involved in difficulties.

It must, however, be noted, that the proportion of infeeting sores, in some regiments of the line, is exceedingly small. This eircumstance has already been referred to in the second lecture, and is proved by Mr. Labatt's published work.

To what, then, is to be attributed this comparative immunity to the severer forms of aequired syphilis, and the modified form in which it has been oecasionally notieed, not only in Portugal, in Germany, in Russia, but also in our own eountry ? The answer to this important question arises out of the observations already made. That which Dr. Ferguson observed in his day may be seen at present. A person who has had hereditary syphilis in his youth will either not contract the infeeting form of syphilis in after life, or will have it in a modified form. An extensive observation of eases as they ineur in publie hospitals will at once show that syphilis as it presents itself among those classes who are likely to have inherited the disease, is a different affection from that which is observed under other eircumstances. The same law may be traced in

the history of individual cases. Instances have come before me where patients, the offspring of parents supposed to have been syphilitic, have shown some modified syphilitic symptoms for many years after they have grown up ; and these patients have appeared insusceptible to any further infection. But it may be said that certain individuals, who have never shown any symptoms of either hereditary or acquired disease, are also apparently not capable of receiving the infecting form of syphilis, or, if infected, that they have the disease in so mild a form as not to require mercurial treatment. The explanation of the occurrence of even these cases is not difficult. An instance lately came under my notice, where a woman with the remains of what I believed to be a syphilitic eruption, had been impregnated ten times. Seven of the children had died, either from the premature confinement of the mother, or within a year or two after their birth ; of the remaining children, two had eruptions which were treated with mercury, and one only never had had any symptom of hereditary disease. Shall we say, in this exceptional case, that because the visible symptoms of any hereditary affection were wanting, therefore something like the same diathesis was not communicated to her, as to the other children ? Or are we quite sure that hereditary syphilis, like gout and certain other diseases, may not pass over some individuals, or even a generation (as far as its sensible effects are concerned), again to appear in some modified form in their descendants ? It would obviously be wrong, in the case of any hereditary disease, to say, because the symptoms were

absent in an individual, or in one generation, that therefore the diathesis had ceased ; and we know not yet through how many generations the latent effects of hereditary syphilis may not produce *some* influence. A man advanced in years, whom I knew from seeing him in a London hospital, and who had formerly had a variety of venereal affections, had a grown-up family. One of his daughters had an eruption on the skin at about seventeen or eighteen years of age, which eruption was treated with sarsaparilla. One of the sons, although he had frequently exposed himself to contagion, never contracted the infecting form of syphilis. This son married, and had a family. After a time his wife had an eruption on the body which was supposed to be syphilitic, and yielded readily to antisymphilitic remedies. Last of all, the son himself had an eruption exactly resembling that of his wife. This I had an opportunity of seeing, and believe it to have been a mild and modified form of hereditary syphilis, which had then developed itself in a visible form, for the first time. Had this son been one of Mr. Rose's patients, he no doubt would have been successfully treated without mercury ; but it would be a grave mistake to suppose that syphilis in what has been called a virgin constitution can be treated in the same way.

LECTURE XII.

 SYPHILITIC INOCULATION MODIFIED BY PREVIOUS DISEASE.

As the effects of the vaccine inoculation may wear themselves out, so that a patient, after the lapse of a certain time, may be revaccinated, so may the syphilitic poison after a time occasionally reproduce the genuine infecting chancre upon the same individual. But it continually happens that patients constitutionally syphilitic are exposed to fresh infection before the influence of the first disease has passed away. The inoculation, may then succeed in a modified form. A pimple, a small tubercle, or an abortive pustule may result ; but these will all want the characteristic symptoms of the originally infecting disease. These modified actions are also peculiar in not having the period of incubation, which is natural to the original infecting sore. They commonly appear shortly after exposure, and are likely to occur, generally in proportion to the irritating nature of the discharge, with which the poison is combined. Thus an indurated sore which does not furnish a secretion which would be inoculable upon a person who had already had syphilis, might, if artificially irritated, become inoculable ; or a secondary

affection, which is not communicable under ordinary circumstances, may, when producing or combined with an irritating secretion, become communicable. Cases of this nature are continually presenting themselves in practice. The affections which result differ from those which constitute the ordinary forms of primary syphilitic infection, and they may safely be treated without mercury. The following cases illustrate this subject experimentally :—

CASE 1. H. C—— came under my care in the Lock Hospital on the 2nd of February, 1854. She had a syphilitic eruption upon the skin, and several irritable sores upon the inner margins of the labia and perineum. The inguinal glands were enlarged and indurated.

Feb. 4th. Several spots were inoculated from angry-looking sores on the margin of the anus and labia.

6th. Several fresh inoculations were performed from other irritable sores.

11th. Each point inoculated had produced a kind of pustule. Fresh inoculations were made with the secretions of the original sores, and with that of the artificial inoculations.

13th. Upon each point last inoculated a vesicle had appeared.

14th. The secretion of each vesicle had become turbid.

16th. Fresh inoculations were performed from the sores, natural and artificial, which furnished the largest amount of secretion. Eighteen hours afterwards the inoculated spots were found to be slightly reddened.

18th. Forty-four hours after the last inoculations no result was perceptible. Several fresh spots were inoculated with the secretion of the sores near the anus, and with that of the sores artificially produced.

22nd. The last inoculations had produced no effect. The inoculations of the 11th were forming small dry scabs. The eruption had now faded.

24th. Several spots were inoculated with as much secretion as could be obtained from any of the sores.

27th. The inoculations last made had produced no effect.

March 2nd. The sores, natural and artificial, had all healed. The patient was discharged as cured, having been under treatment exactly four weeks, and having apparently during the last two weeks not been susceptible of any further inoculation by means of the secretion derived from her own sores.

It was at first difficult to say why, in this case, some of the inoculations were capable of being reproduced, and some not ; why those last made were of a different character from the first ; and why the results of all the inoculations disappeared in so short a time.

These questions appear to derive a solution from the following two cases, which show that although an infecting sore is not capable of being inoculated under ordinary circumstances, yet the same sore will, under a state of irritation, produce an inoculable secretion, and that the effects of the inoculation of that secretion will vary according to the amount of irritation present at the time the secretion is produced.

CASE 2. A lad was admitted into the Lock Hospital

on the 29th July, 1858. He had had gonorrhœa six months previously, but otherwise had been free from any venereal affection until about a fortnight before his admission. He then had a superficial sore behind the corona glandis, which healed in a few days. Two or three days after the first appearance of this sore, a little pimple appeared on the outer skin of the prepuce. This, on the 26th of July, presented all the appearances of a well-marked Hunterian chancre. It discharged from its surface a white turbid secretion. To a portion of this a drop of acetic acid was added, and it was examined by the microscope, and found to contain no pus globules.

July 27th. The secretion was inoculated in several points on the patient's thigh.

29th. This was the day the patient was admitted into the hospital. The secretion from the sore was again examined, and found to contain no pus.

31st. Several fresh inoculations were made. The sore continued to increase in size.

Aug. 3rd. None of the inoculations had succeeded. The glands at the back of the neck were now enlarged, and the skin presented an incipient syphilitic eruption. A small blister was applied to the surface of the sore.

5th. A superficial slough had formed on the surface of the sore, which yielded in parts a puriform secretion. This was inoculated upon the thigh in several points.

7th. The sore now again secreted no pus. Fresh inoculations were performed.

10th. The sore was dressed twice yesterday with the sabine ointment, and now yielded a copious secretion of

pus. This purulent secretion was inoculated in several points on a different part of the thigh.

12th. The inoculations last made had succeeded. The sore still yielded a copious secretion of pus.

14th. The inoculations both of the 5th and 10th had now succeeded, but not those of the 7th. They presented the appearance of circular red patches, with some elevation and thickening of the cuticle. In one place there was the appearance of a vesicle, from which a serous fluid exuded. This fluid was again inoculated upon the patient's thigh. The original sore, which had been dressed with water, now again yielded no pus.

17th. The inoculation from the inoculation had succeeded. It presented the appearance of a red circular patch, with slight thickening of the skin, from which the cuticle was abraded. It had not in the least assumed the appearance of a pustule, nor was anything like pus secreted from its surface. A single pustule, surrounded by very little inflammation, had, however, formed in one of the points first inoculated.

19th. The inoculations appeared as separate red patches on the skin, which in these situations was slightly raised and thickened, but no induration extended into its substance. The solitary pustule which appeared had dried up.

24th. One of the inoculations first made had a slight tendency to ulcerate; the others were desquamating and losing their colour.

CASE 3. Bridget C——, aged seventeen, was admitted into the Lock Hospital on the 26th of August, 1858. She had suffered from a thick yellow discharge

between two and three months. This was followed, in the course of as many weeks, by the appearance of two small places on the upper part of the left thigh. These, upon her admission, presented all the characters of well-marked primary indurated chancres in a state of progress. (Plate II, Fig. 1.) The surfaces of these sores were covered by a scanty tenacious secretion, in small quantity, which, upon microscopic examination, yielded no pus. This secretion was carefully inoculated upon the patient's thigh.

Aug. 28th. The inoculation was repeated. There was at this time no indication of the sores having any tendency to heal.

31st. No result from the inoculations. The two sores had now been dressed for two days with the sabine ointment, and yielded an abundant secretion, distinctly purulent. The secretion from each sore was inoculated in several points close together in two separate places in the thigh.

Sept. 2nd. The inoculations last made have produced the appearance of small incipient pustules in both situations. The secretion from one of these was inoculated in two or three points on the thigh lower down.

4th. The inoculations from the inoculations had apparently succeeded. One of the inoculations of the 31st of August had produced a small pustule. The others had produced only vesicles. The skin over one of these was broken.

9th. The inoculations from the inoculations, performed on the 2nd of September, have dried up. The

inoculations first in order of the 31st of August had entirely lost their puriform character. They now appeared as circular patches, and yielded a serous secretion, mixed with epithelial scales. (Plate II, fig. 3.) The original chancres were now in process of healing.

11th. The inoculations first in order were desquamating, and of a light-red colour. The inoculations from the inoculations appeared as small red pimples, which were gradually losing their colour.

17th. The original chancres were cicatrized. The inoculations were fading and desquamating.

23rd. The inoculations from the inoculations were still visible, and appeared as shining scales of discoloured epithelium. (Plate II, fig. 5.)

25. A few faint secondary spots appeared on the body. The original sores were quite healed, leaving slight induration. The corresponding glands in the groin were still enlarged and hard.

Oct. 4th. This patient now left the hospital, but again presented herself on the 8th. The inoculations appeared as brown spots, the colour of which gradually faded into that of the surrounding skin.

It is quite possible that the persistence of the inoculations, and their peculiar colour in the two last-recited cases, may have depended upon the syphilitic diathesis of the patients. But this in no way militates against the fact that inoculations succeeded at one time, while they failed at another, under precisely the same conditions of the general system.

In Case 1, the inoculations succeeded so long only as

the sores furnishing the secretion maintained their irritable character, and failed as soon as this irritability subsided.

In Cases 2 and 3, the sore, the natural secretion of which could not be inoculated with the lancet upon the patient, furnished an inoculable secretion when artificially irritated.

In all the inoculations above recorded, the effects appear to have been in direct relation to the amount of irritation present, and generally in proportion to the puriform condition of the secretion inoculated. It might be supposed that in the first case the sores ceased to be inoculable because they were in a healing condition, but this would not account for the fact that the inoculations produced from them, ceased to afford an inoculable secretion within four or five days of their first appearance. The inoculation, then, of the secretion of a sore affected with specific adhesive inflammation may take place ; but is not easily performed, when once the patient's system has been affected with syphilis. When successful, the results are very different from those which follow the inoculation of the secretion upon patients not previously syphilitic, or the inoculation of the secretion from naturally suppurating sores. In the latter case each puncture produces a pustule, which by repeated inoculation will produce its like a great number of times. The inoculation of patients previously syphilitic, as a rule fails, or succeeds only under circumstances of accidental irritation. It then can be repeated a very limited number of times ; and the results obtained, even by a number

of punctures in one situation, are comparatively of a trifling description.

There is one circumstance which requires to be noted in connexion with this modified form of inoculation, and which, unless duly understood, might sometimes lead to an erroneous diagnosis. It will occasionally happen that a patient, previously syphilitic, will become inoculated again in a modified form, and upon the point thus inoculated a secondary effusion of plastic material, dependent upon the first infection, may occur. The irritation produced by the modified inoculation will then become surrounded by a certain amount of induration, and this affection may then easily be mistaken for a primary infecting ulcer. Again, it will sometimes happen that a secondary induration upon the prepuce (the consequence of a previous infection) will become abraded, or will ulcerate spontaneously. The appearances then produced are very similar to those which accompany the primary infection, and they are here particularly noted in order that these different diseases may not be mistaken for each other.

CASE.—M. H——, aged eighteen, had previously suffered from syphilis. She was inoculated with the secretion of an infecting sore which had previously been irritated by the application of the sabine ointment, and in another place she was inoculated with the secretion from a syphilitic ecthymatous pustule in its natural condition. On the third day the first inoculation appeared to have taken ; but on the eighth the appearances had faded. At the expiration of five

weeks there was a slight accurately defined induration around the second inoculation.

CASE.—A woman, who, from her previous mode of life had every chance of becoming syphilitic, was inoculated with the secretion from an infecting sore. A pimple followed the inoculation. At the expiration of a month the pimple was still there, and was surrounded by a faint-brown, copper-coloured eruption. These spots occupied a diameter of about six inches, and faded ultimately of their own accord. No other local or constitutional affection appeared as the result of the inoculation.

A modified syphilitic eruption, confined to the neighbourhood of a second inoculation on a patient previously syphilitic, is not uncommon. It is not unfrequently observed in women of the lower class. A syphilitic affection, presenting the distinctive characters of the primary infecting sore, more or less modified, will appear perhaps on some portion of the skin, and after a comparatively short interval an eruption will follow, confined to within a few inches of the modified inoculation. Any general mercurial influence is scarcely required for such affections.

After writing the above, I had the opportunity of seeing a most able and valuable paper in the *Archives de Médecine* for July, by Dr. Diday. In that article Dr. Diday has collected from his personal observation, and from the records of other observers, a considerable number of cases of well-marked secondary infection having occurred in patients who were previously syphilitic. One of the most interesting of these cases is

from the pen of Mr. de Méric, and is worthy of our best consideration. The following case, corresponding to those which have been carefully collected and related with so much point by Dr. Diday, occurred in my own practice, and is related in the *Medico-Chirurgical Review* for January 1854 :—

A gentleman had a syphilitic sore, which was followed by a general eruption on the skin. He then passed two years in the West Indies. After this he returned home, with the faint brown stains of the eruption still visible. In London he contracted fresh disease. Two well-formed indurated and circular chancres presented themselves on the glans penis. In a few weeks these were followed by a well-marked crop of syphilitic lepra, of a bright copper colour, and quite distinct in appearance from the brown stains of the first eruption.

In the cases recorded by Dr. Diday, the second infection was not accompanied by specific enlargement of the inguinal glands, but something like the usual period of incubation existed between the application of the poison and the appearance of the symptoms. There can now be no doubt that a patient's constitution may so far become free from the consequences of a syphilitic infection that, in exceptional cases, he may become infected a second time, and that the fresh infection may then run its natural course much in the same way as if no previous disease had existed ; such cases, however, are very rare. In general, if a second infection occurs, it is in a modified form ; and if it should be followed by any constitutional symptoms,

these present themselves also in a very mild manner.

In patients whose constitutions are under the influence of syphilis the period of incubation of a second infection is comparatively short. It is true that a patient's system may so far have recovered from the first infection, that, as in Dr. Diday's cases above referred to, the natural period of incubation, as well as the other distinctive symptoms of syphilitic infection, may present themselves in a second infection. While the patient's system, however, is under the influence of the first disease, the period of incubation of a second inoculation is short.

CASE.—A medical student became diseased for the first time in the year 1856. As soon as the sore appeared, and before it had become indurated, he inoculated some of the secretion on his own thigh. I saw him three or four days afterwards. There were then signs of irritation on the inoculated spot. This spot soon became converted into a small, hard, button-shaped sore, and then accurately resembled that from which the inoculated secretion had been taken. A small quantity of white lymph was at first visible in the inoculation, but both sores subsequently remained as small, hard, circular indurations, and furnished scarcely any secretion from their surfaces.

It would appear, then, from all the cases and experiments recorded—

1. That after a first infection, and before the induration has appeared, a patient is susceptible of being inoculated again from the same or from another source.

2. That after the induration has appeared he is no longer capable of being inoculated with the infecting variety of the disease, except in cases where the inoculated matter is derived from a part which has been subject to considerable irritation, and that even then the inoculations produce comparatively little effect, and are not followed by any additional constitutional symptoms.

3. That after a certain time the effects of the first infection may, in a great measure, subside, and that then a modified form of inoculation may take place, which may be followed by fresh constitutional disease; but that this also, when it does occur, appears usually in a very modified form.

4. That according to Dr. Diday this second infection is not likely to be accompanied by enlargement of the inguinal glands.

5. That the period of incubation of the second infection varies in inverse proportion to the degree in which the constitution is at the time influenced by previous disease.

The various forms which have now been described in which syphilitic inoculation may be modified, often render the diagnosis of a case in its early stages very difficult. If a case be seen once only, some accidental complication is particularly liable to lead to an erroneous opinion; but if the case be watched for a short time, there will seldom be any doubt as to its real nature.

Nature is, as I believe, always true to herself, and if interrogated fairly, she will furnish a faithful answer.

But this answer is given at her own time and in her own way. If the surgeon demands an immediate response the first time he sees a syphilitic sore, he may be disappointed; but if he will carefully watch the course of the disease, he may with confidence rely upon the information he receives. If a persistent form of suppuration be established after inoeulation, natural or artifieial, *that* disease is of the non-infeeting kind, as far as the patient's constitution is concerned. If the adhesive form of inflammation be established, although after the lapse of some weeks, secondary symptoms will follow. If both kinds of inflammation be present, then the patient has received a twofold inoeulation, and each disease will run its course, modified, perhaps, by, but in spite of, the other.

Independent of the complications arising out of twofold inoeulation, and inoculation modified by the existence of previous infection, there are some even in the primary uncomplicated forms of disease, which are not easily recognised at first sight.

It sometimes happens that the suppurating sore is surrounded by a considerable amount of induration, and that that induration, from some particular circumstances, terminates abruptly, very much in the same way as the induration around an infecting sore. The kind of secretion from the surface of the sore will then afford a means of diagnosis, if the case be uncomplicated, and the part has not been subject to any accidental cause of irritation. But if a doubt should still remain, the inoeulation of the secretion upon another part of the patient's body will, in unmixed cases,

furnish the solution. If the sore be of the naturally suppurating kind, the specific pustule will result within a few days. If the sore be of the indurated and infecting class, the inoculation will be followed by no result, or at most such as has been already described. (See Plate iv, Figs. 1, 2, 3.)

In 1860, a boy presented himself at King's College Hospital. He was fourteen years old, and small for his age. There were no signs about him of his having arrived at puberty. He had had, as he said, one intercourse only. There was, therefore, the less chance of his having received more than one kind of infection. This lad, when he presented himself for advice, had a phimosis, beneath which a circumscribed induration could be felt; a gland in the left groin was enlarged and hard. From the information derived from sensation alone, I had no doubt that this was an infecting sore, and, therefore, I sent him to the Lock Hospital, in order that he might have a proper course of mercury. Before, however, beginning the treatment, I examined the secretion from the sore, with the microscope. To my surprise, I found it distinctly purulent.

The nature of the secretion then appeared to contradict the evidence derived from the sense of touch, and the test of inoculation was had recourse to. The specific pustule was produced, and the secretion from this again produced two other specific pustules, of exactly the same nature. It appeared, therefore, that if this were an unmixed case, the evidence given by the sense of touch had been fallacious, as it was

clearly contradicted by the nature of the secretion, and by the test of inoculation. The patient was, therefore, directed to discontinue the mercurial course which he had commenced two or three days previously, and was treated by steel pills and other non-specific remedies. In Plate IV, Figs. 4 and 5 are copied from a drawing made by Dr. Westmacott after the phimosis had subsided, and when the artificial inoculations were healed. At this period the secretion from one of the original sores on the penis was still purulent. The patient was kept in the Lock Hospital until he appeared quite free from any disease, and for a considerable period afterwards presented himself occasionally as an out-patient at King's College Hospital. He was last seen on the 31st of May (seven months after infection), without the least trace of constitutional disease.

In this case, then, the evidence afforded by the nature of the secretion, and by the test of inoculation, corrected the erroneous impression that would have been and was conveyed by the sense of touch alone.

There are cases, however, in which neither the sense of touch, nor the nature of the secretion, nor the result of inoculation, will give positive information as to whether the patient will have secondary symptoms. These are the *mixed* cases, in which a twofold inoculation has taken place. They occur, for the most part, in those who have never suffered from constitutional syphilis, for the obvious reason that in those who have so suffered, inoculation of one kind can rarely and with difficulty be performed.

Twofold inoeulation may ooeur either in the same or in different parts, at the same or at different times. When it occurs in the same part and at the same time, the results of the inoeulation of the secretion from the suppurating sore will first develop themselves, and, subsequently, the results of the inoeulation of the secretion from the infecting sore. This depends upon the different period of incubation which naturally belongs respectively to each kind of disease.

The cases in practice which have led to the greatest confusion are those in which the inoeulation of the secretion from a suppurating sore has followed, after the lapse of three or four weeks, on the same spot, the inoculation from an infecting sore. We have, then, the results of two kinds of action, and their respective products in close proximity. The suppurative inflammation does not, then, *prevent* the infection of the patient's constitution ; the adhesive inflammation does not prevent the appearance of the "specific pustule." The means of diagnosis, which would refer these mixed sores either to the infecting or to the suppurating class exclusively, are therefore absent.

There is at present (Nov. 1862), in the Lock Hospital, a man who was admitted with a single ulcer on the prepuee, surrounded by a considerable amount of general induration. The glands in the groin were enlarged, but not distinct from each other. The secretion from the surface of the sore was purulent, and when inoeulated produced the specific pustule. As the irritation subsided around the sore, the induration

became more accurately circumscribed, and in the course of a few days a specific papular eruption appeared upon the patient's skin.

Although, in such cases, it may be very difficult to form a correct diagnosis at once, yet by watching the course of the symptoms this may be done with much accuracy.

LECTURE XIII.

TRANSMISSION OF SECONDARY SYPHILIS.

THE contagious character of secondary syphilitic affections was generally admitted before the time of Hunter. In the experiments which he made he was led to the conclusion that the products of constitutional syphilis were "not capable of acting in some respects on the same body or same state of constitution as that matter does which is produced from a (primary) chancre." He says that the secretion from a chancre generally when absorbed produces a bubo, but that we never find a bubo arising from a secondary syphilitic sore. When there is a venereal ulcer in the throat, no buboes appear in the glands of the neck. Venereal sores on the arms, or even suppurating nodes on the ulna, do not as a rule produce swelling of the axillary glands, although these will very certainly be affected if syphilitic matter from a primary chancre be inoculated on the skin of the arm. Again, when syphilitic blotches or nodes form on the legs and thighs, the specific affection of the glands in the groin, which accompanies primary infection, does not occur.

These considerations so far biassed Hunter's mind,

that he came to the conclusion that the secretions from the secondary syphilitic affections were not inoculable. He mentions, however, that it was asserted in his day that ulcers in the mouths of children derived from constitutional and hereditary disease, produced the same disease upon the nipples of women who suckled them. That is, the children were contaminated either by their mothers or fathers; the child received the disease by hereditary descent; and the nurse was infected by the child. "If," Hunter observes, "it were possible to contaminate once in this way, it would be possible to contaminate for ever. How far the observations upon which the before-mentioned opinion is founded have been made with sufficient accuracy I know not."

As has been already fully pointed out in a previous lecture, Hunter committed the grave error, in which he was eagerly followed by a host of subsequent writers, of supposing, because the syphilitic poison was not inoculable as a rule upon the person who produced it, that, therefore, it was not inoculable upon a person who had not previously had the disease.

Experiments and observations have now been made with sufficient accuracy, and repeated a sufficient number of times, to show that the circumstances contemplated by Hunter actually do exist, and that syphilis may be communicated in this way, and that it may be so communicated from one patient to another an unlimited number of times, so long as the poison is brought in contact with a person not previously infected. With the increased light which modern investigations have shed upon this subject, it is not unin-

teresting to contemplate some of Hunter's own cases. A child was supposed to have infected its nurse with syphilis. The parents had been married about twelve years. The mother fell into a weakly state of health, and miscarried of her third child at the end of five months. The fourth child came at seven months, but was puny, weak, and had hardly any cuticle when born. It was immediately after birth attacked with a violent disorder of the bowels, so as to purge blood. It died in a few days and was opened by Hunter. The whole skin was almost one excoriated surface. The intestines were much inflamed and thickened.

With her fifth child, from great care, this patient went eight months, and it was hoped she might go her full time, and also that this child might be more healthy than the former. When she was delivered the child was very thin, but free from any visible complaint.

Some days after birth, it became blistered in a vast number of places on its body. These blisters were filled with a kind of matter which broke and discharged a thinnish pus. The inside of the mouth was in the same condition. About three weeks after its birth it died.

Some weeks after the death of the child, the nurse's nipple, and the ring round the nipple, inflamed, and sores or ulcers were formed with a circumscribed base. They were poulticed, but without benefit. She also complained of a sore throat, but the sensation she complained of was so low in the throat that nothing diseased could be seen. A swelling took place in the glands of the arm-pit, but they did not suppurate. She

applied to a physician, and from the account she gave he pronounced her disease to be venereal, and that she had given suck to a *foul* child ; and ordered ten boxes of mercurial ointment to be rubbed in on her legs and thighs, eight of which had been used when Hunter saw her, and then her mouth was become extremely sore.

These circumstances came to the ears of the family, and an alarm took place. The husband went from surgeon to surgeon, and from physician to physician, to know if it was possible for him to have the disease for fourteen years, and never to have perceived a single symptom of it in all that time : or if it was possible he could get children with the disease now, when the two first were healthy. He also wanted to know, if it was possible for his wife to have caught the disease from him under such circumstances ; and also, if she could breed children with this disease, although she herself never had a single symptom of it.

Hunter ordered hemlock, but that appeared to have no effect. While this was going on, eruptions broke out on the skin. The skin of the hands and fingers peeled off, the nails of both fingers and toes separated, and sores formed about their roots, which were all supposed to be venereal. She looked dejected and sallow. She was desired to go into an hospital, which she did. As soon as she got into a warm bed, and had good wholesome food, she began to mend, and in about five or six weeks she had got fat and almost well, the sore only about the root of the nail of the great toe had not healed ; but that appeared now to be owing to the

root of the nail being detached, therefore acting as an extraneous body. She came out of the hospital before this toe had got well, and by returning to her old poor mode of living the soreness in the mouth returned ; however, she mended in the end without the use of more mercury.

Had not Hunter been deceived by his own experiments and come to the conclusion that constitutional disease could not be communicated by contact, such instances as he has himself related, must have led him to a different conclusion.

The following cases are among those which he has recorded, in which the disease was supposed to have been produced by the transplantation of teeth :—

A young lady had a tooth transplanted, and the tooth fastened extremely well. It continued firm for about a *month*, when the gum began to ulcerate, leaving the tooth and socket bare. The ulcer continued, and blotches appeared upon the skin, and ulcers also in the throat. The disease was treated as venereal, and the symptoms disappeared, but they recurred several times after very severe courses of mercury. She at last got well.

A gentleman had a tooth transplanted, and the tooth remained without giving the least disturbance for about a *month*. The edge of the gum then began to ulcerate, and the ulceration went on until the tooth dropped out. Some time afterwards, spots appeared almost everywhere on the skin. He was put under a course of mercury and all disease disappeared. Some time after, the same appearances returned, with the addition

of swelling in the bones of the metacarpus. He was now put under another course of mereury more severe than the former, and in the usual time all the symptoms again disappeared. Several months after, the same eruptions came out again, but not in so great a degree as before, and without any other attendant symptoms. He a third time took mereury, but it was only ten grains of corrosive sublimate in the whole, and he got quite well. The time between his first taking mereury and his being cured was a space of three years.

In the *Medical Transactions of the College of Physicians of London*, published in the year 1785, Dr. William Watson, at that time the vice-president of the Royal Society, gives an account of the case of a young unmarried lady, about twenty-one years of age, who had a tooth transplanted into the socket of one of the incisors of the upper jaw. The new tooth fastened exceedingly well. It remained firm for a month, when her mouth became very painful. The gum became ulcerated, and part of the alveolar process was left bare. Before another month, the ulceration occupied the whole space under the upper lip, between the teeth and nose. It extended likewise to the cheeks and throat. Blotches then appeared on her face, neck, and various parts of the body; several of these became ulcerated painful sores. After trying a variety of tonic medicines without benefit, two grains of calomel were ordered once or twice a day. She took about fourteen pills when she was obliged to discontinue the use of the calomel, on account of the

gripping and purging. During the time that she was taking the pills the ulceration of her mouth and cheeks did not spread, but were less painful, and of a milder appearance. The blotches on her face and body grew paler, and such of them as had ulcerated healed apace, and no new ones appeared. The mercurial inunction was now tried, but in ten or twelve days the gripping and purging returned, and the ointment was discontinued.

The good effects of the mercury were, however, Dr. Watson observes, very apparent. The blotches all disappeared; the ulcerations in her face and body completely healed, and those of the mouth nearly so. A portion of the alveolar process subsequently exfoliated, and ultimately the patient died.

Dr. Watson remarks, that the progress of this disease not being impeded by the most powerful antiseptics, and its giving way to mercurials, even in small doses, cannot but suggest that the disease was truly venereal.

At the time that such cases as the above were recorded, had not the idea taken possession of some men's minds that absorption of syphilitic poison under the circumstances was impossible, the diseases described would doubtless have been assigned to their right cause.

In some of the cases care was taken to wipe the surface of the tooth before it was transplanted, and it was thought, that by so doing, every chance of inoculation would be prevented, but a brief reflection on some of Hunter's own experiments is sufficient to show how futile such a notion is. In the experiments which

Hunter performed of transplanting teeth and other parts from one animal to another, it was clearly proved that each part of a living being has its independent vitality, which it can maintain for a certain time independent of the rest. In the Museum of the College of Surgeons there is now a tooth which Hunter transplanted into the comb of a cock. The tooth grew in its new situation, and when the cock died, Hunter injected the tooth through the blood-vessels of the cock. During the time that the tooth was withdrawn from its natural socket, and before it had acquired any fresh connection in its new bed, it maintained its own vitality. Subsequently its blood-vessels communicated freely with those of the cock, and their contents passed into each other.

Now it has clearly been shewn in a previous lecture, that the blood of an infected person may, when inoculated, communicate syphilis. If, then, the tooth of an infected person be transplanted into the mouth of a person who never before has had the disease, the minute quantity of blood which it contains may be sufficient to infect the healthy person ; and it is quite clear, that simply wiping the outside of the tooth would not prevent such an occurrence.

It is not, however, only the blood of an infected person, or the secretion of what are usually called secondary symptoms, which may become the means of communicating syphilis from a person constitutionally affected to one who has not previously had the disease. There is reason to believe, that the ordinary secretion of the body, when derived from a part in a state of

increased action or of inflammation, may produce the same effect.

Dr. Marston, who has lately contributed a very valuable paper to the *Medico-Chirurgical Transactions*, has, by quite an original and independent series of observation, arrived at very much the same conclusions as myself upon this subject, and his cases are the more valuable, as his opportunities as an army surgeon of ascertaining the exact condition of his patients during their illness and of observing them afterwards, are much greater than can ordinarily occur in private practice.

The following are among Dr. Marston's cases :—

Two men were admitted into hospital with gonorrhœa, Br. A, and Gr. S. At the time of this occurrence, we had the power to report any case of venereal, and upon the woman being pointed out by the affected individual to the police, she was handed over for inspection and treatment. The men came to hospital within forty-eight hours of each other, and were placed in contiguous beds. Gr. S. went with the police, and pointed out the source of his contagion. Br. A. went upon the same errand to the same house, and found the woman already removed. Gr. S. told me that, to their mutual surprise, they discovered that it was the same woman in each case. Both suffered from all the symptoms of gonorrhœa, and there was no suspicion to the contrary. Br. A. had suffered from syphilis before, Gr. S. never. (This statement is made from their own words, and after a minute examination of their persons.) After remaining in hospital

a long time, Br. A. was discharged cured, and no further symptoms, so far as I could trace, appeared in his case. Gr. S.'s recovery was delayed from gleet and irritable bladder, for which instruments (No. 10 and 12) were used. They passed without difficulty, local tenderness, or hæmorrhage. After appearing anæmic and in ill-health, Gr. S. had sore throat (ulcerated tonsils) and a guttural voice ; subsequently papules appeared on the inside of the lips and the buccal membrane, coincidently with psoriasis palmaris and "nocturnal rheumatism." The inguinal glands were slightly enlarged symmetrically. For these symptoms he took iodides of mercury and potassium, with mercurial vapour bath, by which means, after many relapses, he was cured. The case was shown to some surgeons, who, of course, suggested a concealed chancre ('chancre larvé' of Ricord.) I passed sounds, and tried to discover a localized induration, without avail. If anything, perhaps the canal was firmer and more swollen to the touch than usual. Some urethral discharge was inoculated in the skin of thigh (at the time it was gleety and apparently prostatic secretion), without any effect.

The woman in this case, I learnt from the civil surgeon, had a vaginal discharge, but no primary ulcer that he could find. She was, however, suffering from acne of the face and a cutaneous syphilide.

Gr. C. five or six days after connexion, had urethral discharge, and was admitted as suffering under "gonorrhœa" by another medical officer. After the use of nitrate of silver injections and salines, as abor-

tive treatment, he rapidly improved, but a slight gleet remained, for which the penis was blistered. This urethral discharge afterwards augmented in amount, and became most copious and purulent, and symptoms of cystitis set in. After having been in hospital eight weeks, he came under my care. Upon the dorsum of the penis were two large, oval, indolent, indurated, raised lumps. To me they appeared chancres. The glands of both inguinal regions were passively enlarged. In answer to my questions, and without any suggestion whatever on my part as to their nature, he said, "One has existed about forty-five, and the other about forty-six days, as near as I can tell. They gradually became and remained as you now see them, and they came, I think, from the discharge getting in contact with two sore places from which the skin had been removed after blistering." In seventeen days both healed under the influence of mercury. I learn that a papular syphilide has since appeared upon the trunk. By a later report it appears that this man has again passed under treatment for marked anæmia, and ecchymatous sores upon the extremities.

Gr. R. was admitted with gonorrhœa (?). He remained in hospital an unusually long period, from having suffered from gleet and irritable bladder, without stricture, followed by a peculiar form of paralysis of the left lower extremity, which was supposed to be an illustration of the "reflex paralysis" described by Brown-Séquard. Continuing very anæmic, he was sent to a sanitarium for a time, without any benefit; and, pending a medical board, he was discharged from

hospital, and put upon "convalescent duty." No suspicion whatever existed as to his having suffered from anything more than an ordinary, though protracted, attack of gonorrhœa, with some of the usual sequelæ. As the symptoms of local paralysis excited much interest, he was more than commonly watched. It was discovered, however, by accident, that some ecthymatous and rupial looking sores had appeared upon the extremities. Since that period he has suffered from a mixed cutaneous syphilide, papules upon the lips, copper-coloured stains, and indolent glandular swellings, with rheumatism and marked cachexia, for all which symptoms he has received the greatest benefit (cure?) from mercurial vapour baths, with iodides of potass and iron. In 1854, before enlistment, he had a venereal sore upon the penis.

A gunner caught a gonorrhœa in Gibraltar, in 1860. It proved very chronic indeed, and passed into gleet; the inguinal glands enlarged symmetrically, and one suppurated. Urethral chancre was suspected, and mercury was given him. He slowly recovered from his urethral discharge, was invalided to England, remained in Woolwich Hospital for some time, and in September 1861, joined his brigade. Marked cachexia; numerous indurated glands in either groin, some of which inflamed, but did not suppurate. After he had remained free from any urethral discharge for six or eight months, it returned, copious in amount, and remained for six or seven days. At the same time he had sore throat (but no ulcer), nocturnal pains and lichen of the trunk, with engorgement of the post-cervical

glands. No. 12 catheter passed easily, and no local sore or induration was detected.

Grs. H. and R., in January 1859, had connexion with the same woman: both suffered from urethral discharge (simulating gonorrhœa) and chancre, as the products. Gr. R. Date of appearance of the disease uncertain, but he is positive that seven days elapsed before any symptom appeared. At first he had an erosion upon the inner aspect of the prepuce, which was "burnt with caustic." It became a regular Hunterian chancre, for which he remained in hospital seventy-five days. One gland in the groin suppurated. Three days after the appearance of the sore, he got urethral discharge, which continued for a month. Treated with mercury. Syphilitic rheumatism followed three months afterwards, since which time he says he has never felt well. A slight scaly eruption appeared upon the arms at one time, which went away, and he had sore throat, which also passed off without treatment. Now, (January 1862), he is very anæmic, the glands in either groin are enlarged, and he complains of a pain, having nocturnal exacerbations, extending from the epigastrium round the left lower ribs to the left shoulder. His conjunctivæ are slightly yellow. This pain has lasted for months, and been variously treated. It was supposed to be due to dyspepsia. "In fact, sir, since that venereal I have never been the same man." He is at present being treated with iodides of iron and potash, and a mercurial vapour bath twice a week, with much improvement. Since cured.

Numerous cases similar to those of Dr. Marston have occurred under my own observation.

A surgeon in much practice in Tyburnia brought a young gentleman, who was supposed to have gonorrhœa only, for my opinion. There was a discharge from the urethra, but in addition there was a small circumscribed induration on one side at the junction of the glans with the prepuce. This was not accompanied by any ulceration and might easily have escaped detection. There was in my mind no doubt as to the nature of the case, and I at once told the surgeon and the patient that secondary symptoms would follow. My prediction was but too surely verified.

It is by no means always easy to say whence the secretion is derived which contains the infecting matter. I have lately had under my care three medical men, each of whom had become infected in their hands during their attendance upon midwifery cases. In one of these instances craniotomy had been performed, and in attempting to extract the child the surgeon had his finger between the bones of the foetal head. A pain then occurred, and pressed the bones violently against the surgeons finger ; an abrasion was the consequence. At the expiration of four weeks, a phagedænic looking sore, surrounded by induration, appeared on the finger at the part corresponding to that which had been injured by the foetal bones. This was followed by secondary symptoms, with extreme depression. For several years, this gentleman was unable to attend to his business ; but ultimately his health was entirely restored by a course of calomel baths.

In a second instance an indurated sore formed on the finger of a medical man, and his health was entirely broken down by the symptoms which followed. This case was complicated by the occurrence of secondary abscesses.

In the third case, the surgeon would scarcely believe that the small irritable indurated spot, which had formed on the side of his forefinger, could have been the original cause of his failing health. The subsequent history of the case, however, fully revealed the real nature of the disease.

The following cases, selected from among others, and noted with much care, show that secondary syphilitic disease may be communicated by contact from one individual to another, and that the way in which it is so communicated is often by means of secretions derived from an irritated part. It is obvious, however, that secondary syphilis is not readily communicated by simple contact. Husbands and wives, children and their nurses, are constantly seen living together, where one party alone is affected, and the disease is not communicated to the other.

Many secondary syphilitic affections do not yield any fluid secretion, and this is probably a necessary condition for inoculation. In their ordinary state, these affections would not be inoculable, but clinical observation renders it highly probable that, under conditions of increased action, they may become the means of communicating the syphilitic disease. An indurated chancre which has ceased to be communicable to another part of the patient who bears it, may under

irritation, be made to produce a kind inoculation, as illustrated in Lecture XII, and Plates II, IV, and V ; and secondary syphilitic affections, which are not capable of being communicated, under ordinary circumstances, to another individual, may, in like manner, under increased activity, become infectious. The same fact is in all probability true with regard to the natural secretions from a person constitutionally syphilitic when derived from an inflamed surface.

CASE 1. Frances H. was married in August, 1858. In January and February, 1859, she was under my care for sore throat, tubercles around the anus, and stricture of the rectum. These symptoms were supposed to be of a syphilitic nature, and the patient was accordingly subjected to mercurial treatment, which, however, she was unable to continue as long as was desirable.

In the beginning of May, the husband, who, up to this period, had not had syphilis, discovered a small red pimple on the prepuce. This pimple gradually enlarged, and in about a month assumed the appearance of a tubercle imbedded in the skin, without ulceration. A well-defined, cartilaginous induration, which terminated abruptly, gradually extended itself from this point, and became divided into two parts by a fissure caused by the retraction of the prepuce. With the exception of this fissure, there was, during the course of the disease, no ulceration nor abrasion of the surface. The accompanying drawing (see Plate III, fig. 1), by Dr. Westmacott, represents the induration as it existed on the 24th of September, and it also represents

the glands in the groin, enlarged, but not inflamed. The condition of the inguinal glands in this case was exactly the same as that which is so well known as accompanying the primary infecting sore.

After the induration had fully developed itself on the husband's prepuce, the wife was carefully examined, and the edge of an abrasion or ulceration within the *os uteri* was distinctly seen. On the 23rd of September, at her full period, she was delivered of a child, which, from its condition, was supposed to have died some ten days previously. About this time, the husband became much emaciated, the posterior cervical glands enlarged, and some faint, copper-coloured blotches appeared on the forehead. The secondary eruption would, no doubt, have been much more developed, had it not been for the mercurial action to which he was subjected. A sealy syphilitic eruption subsequently developed itself on the wife's body.

If testimony, obtained with much care, and under very favourable opportunities, is to be believed, neither husband nor wife had exposed themselves to contagion from any illicit source between the period of their marriage and the commencement of the disease in the man.

In this case, then, we have the wife infected with secondary syphilis before marriage, but living with her husband for nine months without communicating to him any disease. In the beginning of the year 1859, the uterus is called into increased activity ; an abrasion or ulceration (which from the history of the case must be regarded as of a secondary syphilitic character)

takes place within the os uteri, and then the husband presents a disease with all the characters of the specific adhesive inflammation.

CASE 2. Susan B, æt. 66, presented herself at King's College Hospital on the 24th of October, 1853, with a scaly, copper-coloured eruption raised above the surface of the skin, and having in some parts a tubercular appearance. She had also a well-defined and extensive, indurated sore on the lip. She stated that she never had any venereal affection, and had given birth to twelve healthy children.

Eighteen months before applying to the hospital she had noticed a pimple on the inside of the upper lip, which contained a little clear fluid. This broke, and a small sore formed, which, however, again healed in about a month, leaving a circumscribed induration. Three weeks ago the sore again broke out, and gradually extended until the date of her application at the hospital. An eruption made its appearance between three and four months from the first commencement of the pimple on the lip, and this had continued to recur at intervals ever since.

This old lady had taken her granddaughter to nurse, and having become exceedingly fond of it, was in the habit of constantly kissing it. Her son, she knew, had suffered from some venereal disease five months previous to the birth of the child; her daughter-in-law had died a few days after her confinement, and had not suckled her infant, which was consequently brought up by hand. When the child was ten weeks old, some sores appeared on its tongue and lips. These were

followed, a week afterwards, by an eruption on the nates, which was still visible when the grandmother applied at the hospital, and was clearly of a syphilitic nature. This woman might have, and probably often did, kiss her son with perfect impunity, but the syphilitic poison appears to have acquired increased activity with the new life of the child, and with that increased activity to have become more readily communicable by contact.

CASE 3. Mr. and Mrs. — were married in August, 1854. Mr. — had contracted syphilis in August 1853. The sore remained open for three months. About a month after it had healed, a secondary eruption appeared upon the skin. Four months before his marriage, he considered himself quite well; there were the remains of a syphilitic eruption, however, visible, and on the inner fold of the prepuce a very small, circumscribed induration could still be felt. A month after marriage, Mrs. — perceived an indurated spot on the left labium, which was sore when touched; some small tubercles subsequently formed, and the glands in the groin became enlarged, but not inflamed.

In the beginning of December this patient had some condylomatous excrescences at the margin of the anus, and an extremely painful fissure of the rectum. In another week an unmistakable syphilitic eruption covered the body. She had not, up to this time, become pregnant. In this case, again, simple contact would not have been sufficient to communicate the disease; but under increased action the poison seems to have

gained an activity which it had not before, and to have become again contagious.

CASE 4. A gentleman and lady were married in the year 1859. Two months afterwards the wife experienced some irritation about the labia, which was followed by specific enlargement of the inguinal glands on both sides. Four months later, there was a well-marked syphilitic eruption on the body, and enlargement of the posterior cervical glands. There was also at this time the remains of an indurated tubercle which did not appear to have ulcerated, on the left labium, and the inguinal glands remained enlarged, but not tender, nor inflamed. This patient had not become pregnant; the husband had very slight remains of an eruption, the result of syphilis contracted four years previously. There was also very slight remaining induration in the site of the original disease, and the skin in the immediate neighbourhood had been since his marriage occasionally inflamed and excoriated. In this case the friends of the lady, having received imperfect medical information, accused the husband of having contracted fresh disease after his marriage.

CASE 5. The wife of a missionary applied to me with her husband, on the 1st of January, 1861. She was the mother of a healthy family, and until recently had enjoyed good health. She had kept a kind of home for destitute girls, and to one of these girls, who was subsequently known to have been a patient of the Lock Hospital, was entrusted the care of this person's baby. After the lapse of a certain time the baby had a well-marked syphilitic eruption on the body and nates, the mother

remaining in the meantime quite healthy. Four months after the affection showed itself on the baby, the mother had characteristic symptoms of secondary disease. I had an opportunity of tracing the course of the disease both in the child and in the mother, but although every effort was made I could never discover how it was that the child first received the disease, or by what means it was communicated to the mother. But the whole of the circumstances left no doubt whatever on the minds of any who witnessed the case, that the disease had been given, by the girl who was taken into the missionary's family, to the baby, and that it was communicated by the child to its mother—an interval of four months having occurred between the first appearance of the symptoms in the child and in the mother.

One of the most interesting cases proving the inoculability of the secretion from a syphilitic patient, is one that occurred to Hunter himself, and which from being misinterpreted led many subsequent writers to doubt its accuracy. It, however, shows clearly enough that the irritated and inflamed mucous membrane of the urethra may furnish at the same time, a secretion resembling that of a simple gonorrhœa, and also the poison which will give rise to an infecting chancre. Hunter inoculated himself on a Friday. On the Sunday following there was a sense of itching which continued until the Tuesday. The inoculated part now appeared as a speck, was red and *thickened*. By the Tuesday following the speck had increased and discharged some matter.

Caustic was applied and the sore healed, but four months afterwards it broke out again. It healed and opened again several times. A swelling took place in the right groin. This was followed by an ulcer on the tonsil and copper-coloured blotches on the skin. The disease recurred more than once on the tonsil and on the skin, and was ultimately cured by mercury at the expiration of three years.

The same disease which Hunter conveyed to himself in the secretion from the inflamed mucous membrane of the urethra, may readily be communicated by the secretion from the diseased mucous membrane of the mouth in syphilitic patients. This fact is fully illustrated by the cases already recorded, in which mothers were infected by their children at the breast, and in which children were infected by their nurses.

The communication of the infection from one adult to another by the same means is not very uncommon.

CASE. A young woman had an eruption which was supposed to be syphilitic. Upon being questioned upon the subject she indignantly denied the possibility of such being the case. When I saw the eruption, and the accompanying sore throat, I had no doubt whatever as to its specific nature. I found on the tongue a raised, circular, hard lump, and the submaxillary lymphatic glands were in a state of chronic induration. This patient submitted to an examination. There was no enlargement of the glands in the groin, and the hymen was perfect. Upon inquiry it was ascertained that this patient was in the habit of using the same spoons as another servant who was known to have a

syphilitic affection of the mouth. The mode of entrance of the syphilitic poison in this case was indicated by the persistent induration on the tongue, and by the corresponding chronic multiple enlargement of the submaxillary lymphatic glands.

CASE. A young gentleman about to be married had a well-marked circular induration, superficially excoriated, on his tongue. The submaxillary lymphatic glands were in a state of chronic indolent enlargement. The patient maintained that his symptoms could not be syphilitic, but admitted, upon being closely questioned, that he might have caught the disease on his tongue from the lips of an infected person. The nature of the disease was fully proved by the appearance, in a short time, of a very well marked general syphilitic eruption.

M. Rollet has recorded a very striking case in which the disease was transmitted by the mouth from one individual to another, and from him to a third.

A. S. had primary syphilis in 1858, followed by a papular syphilitic eruption, and excoriations on the lips. This patient was a glass blower, and in his occupation passed the tube through which he blew, to another workman who carried on the process.

This second workman had in October a hard lump the size of a cherry stone, on the anterior surface of right side of the lower lip. The corresponding lymphatic glands became specifically affected, and on the 10th December he had ulceration of the throat.

This patient passed the tube in his turn, and after

he had done his part, to another workman (F.G.) who completed the process. This third workman in December had several ulcerations on his lips, and a mucous tubercle at the back of the throat with pain in swallowing.

The following case was communicated to me by Dr. Marston, to whom I am much indebted for many valuable suggestions in reference to the present work :—

“A gentleman was suffering from symptoms of constitutional syphilis. Besides other symptoms, he had some fissures and epithelial ulcers upon the inside and angles of the lips. These were certainly not primary, but a part of the secondary symptoms, under which he was suffering. He stated that he feared he might have infected a female, by labial contact. From the nature of her symptoms I inferred that his fears were well grounded. In due course of time, this female suffered from constitutional syphilis, and was treated for such by some eminent professional men.

“The first symptom in her, was an irritable looking and indolent fissure upon the mucous membrane of the lower lip.”

The experiments and cases recorded in this and the preceding lectures, appear fully to establish the fact, that not only are the secretions from secondary symptoms inoculable under certain circumstances, but that the blood, and the secretions of inflamed mucous surfaces, in syphilitic patients (even where no distinct form of secondary disease is known to exist), may be the means of communicating the disease.

M. Rollet is indeed of opinion that a gonorrhœa in a syphilitic patient will not communicate syphilis. In this opinion he is probably correct, inasmuch as we know that the products of other morbid poisons, when inoculated from a syphilitic patient, will produce only the specific disease in which they originated.

But the case is very different when a purulent discharge originates in a syphilitic patient, independent of any adventitious cause. This secondary product may then, without any distinctly recognised form of secondary syphilis, communicate the specific morbid action in which it had its origin. The viscid muco-purulent discharge, which flows from the neck of the uterus in a state of chronic inflammation, in a syphilitic patient, may, doubtless, communicate a discharge (not necessarily gonorrhœal) to a man, and with that discharge it may, as illustrated by Hunter's own case, be the means of conveying syphilitic infection.

In the cases of this nature, which have fallen under my own observation, I have thought the discharge more viscid and tenacious than that of ordinary gonorrhœa, not accompanied by the same amount of ardor urinæ, and of shorter duration.

But it is evident that a twofold disease, each of a specific nature, viz. a real gonorrhœa and a genuine syphilitic infection, may, in this way, be conveyed. This point is well illustrated by the following case. On the 6th of May, 1861, I received the following in a letter from a well-informed surgeon in large practice :—

“Mr. — came to me in the middle of February, with acute gonorrhœa, which was relieved by ordinary treatment in about five weeks.

“Early in April, nearly six weeks after I had seen him, a sore appeared on the prepuce, which I thought was an excoriation produced by the gonorrhœal discharge. After a few local applications this healed, but after healing it became surrounded with an indurated circumference, which makes me suspect venereal mischief.”

In due course this induration was followed by well marked secondary symptoms.

The two following cases illustrate the same subject :

A young midshipman, on his return from sea, had intercourse with one woman only. He had a viscid discharge from the urethra, for which he attended very regularly, as he was most anxious to get well before he again went to sea. In a month the discharge from the urethra suddenly ceased, but an induration, accurately circumscribed, and accompanied by a superficial abrasion, appeared immediately behind the glans penis on the right side. The corresponding inguinal glands soon became enlarged and hard, but not inflamed. The induration slowly increased, and there was every reason to suppose that it would soon be followed by a secondary eruption, when the further observation of the case was prevented by the patient being obliged to join his ship.

A young lad presented himself at King's College Hospital on the 2d of December, 1859, with a well-marked circular and circumscribed induration in the upper part of the prepuce, immediately behind the glans. He had had one connexion only ; this was followed by a discharge from the urethra, unaccom-

panied by any ardor urinæ. After the lapse of a month, the discharge ceased, and the induration made its appearance ; this was at first accompanied by abrasion of the surface, which, however, soon again became covered with cuticle exactly resembling that of the surrounding parts. The glands in the groin were specifically enlarged.

LECTURE XIV.

CONSTITUTIONAL SYPHILIS.*

THE presence of the syphilitic poison, when received for the first time into a patient's system, is usually marked by a certain amount of general disturbance. The patient feels feverish and uncomfortable; the skin becomes dry, and the tongue perhaps coated. It occasionally, however, happens that the secondary or constitutional symptoms show themselves without the patient feeling any general inconvenience.

Lassitude, weariness, and pain in different parts, frequently mark the progress of the disease. The skin loses its fresh and healthy colour, and assumes often a sallow hue.

When the general system is thus affected by the syphilitic poison, it is probable that the nutrition of every part of the body may be thereby influenced. The same tendency to the separation of lymph from the other elements of blood may be manifested in any part

* The description of secondary syphilis in this and the following Lecture does not differ in any essential particulars from that which has already been published in the first volume of *Holmes's Surgery*.

of the body as in the original seat of the disease. These effusions are more or less organized, and take their characters from the structures in which they are formed. Thus, in the skin, the papillæ become inordinately developed ; and if several of these unite together, tubercles are formed. On the iris, the lymph effused forms fibrous bands, which unite it to adjacent parts and prevent its actions. If the periosteum of a bone be affected, the effused material ultimately becomes converted into new bone ; and this process, from the unyielding nature of the parts, is attended with much pain, experienced chiefly at night, which has been supposed to be the period of growth. According to the constitution of the patient, the part affected may take on the adhesive, the suppurative, or the ulcerative form of inflammation ; or any of these may terminate in gangrene, molecular or of the whole surface. Hence a syphilitic affection which commences as a pimple, may at a subsequent period suppurate, or ulcerate, or a portion of its surface may be thrown off, as a small slough. Different names have been given to these different forms of disease ; but it is obvious that as long as they are liable to pass one into another, no very accurate divisions can be made. Again ; a division has been made with regard to the time at which different parts of the animal economy are affected. The skin, the throat, the eye, and the absorbent glands, are those in which the disease generally appears in the earlier stages of the complaint ; and diseases of these parts have been called secondary symptoms : whereas the fibrous and osseous tissues and the deeper struc-

tures are, as a rule, affected later, and have been called tertiary symptoms. This distinction will be adopted for convenience of description, but it must not thence be inferred that there is any well-marked natural division ; and, in fact, the so-called tertiary symptoms sometimes appear before the secondary, and the parts belonging to these respective classes are constantly found affected at the same time.

SECONDARY SYMPTOMS.

The specific induration around the infecting sore has been regarded as the first of the secondary affections. This is, however, not attended with any of the constitutional symptoms above referred to. At an uncertain date, but generally from four to seven weeks from the first appearance of this induration, the syphilitic fever, often very slightly marked, will occur ; and in a great majority of instances this will be followed by an exanthematous eruption of the skin, often accompanied by sore throat. At the time that this occurs, a change may frequently be observed in the character of the original sore ; a fresh effusion of lymph may take place in its neighbourhood, or the sore itself may ulcerate in a way that it did not before. The nature of the sore will now become altered—a free secretion of pus will often take place from its surface. It no longer presents the characters of the adhesive inflammation only. It has, in fact, become one of the secondary symptoms of the disease. The inguinal glands, in like manner, which up to this period were indurated and enlarged only, will now sometimes show

signs of increased morbid action. They may become tender to the touch. The thickening, originally confined to the glands themselves, may involve the surrounding cellular tissue ; and it not unfrequently happens that an abscess will form either in one of the glands themselves, or in the surrounding structure. These suppurating buboes are to be regarded as a part of the secondary symptoms ; and their occurrence in no way invalidates the fact dwelt upon in Lecture IV., viz. that the sores which produce syphilitic infection of the constitution do not produce suppurating buboes, excepting from some accidental cause.

SYPHILITIC ERUPTIONS.

Roseola, the eruption which generally first succeeds the syphilitic fever, is of a rose-red colour, not raised above the surface of the skin ; disappearing upon pressure, and returning as soon as the pressure is removed. It appears in more or less rounded patches, giving a mottled appearance to the skin ; when examined closely, each patch appears made up of a cluster of papillæ, more injected than natural. This eruption will sometimes disappear within a few days. If it persists, the papillæ forming each patch will generally become visibly enlarged, and the colour of the eruption will gradually change to a copper colour. This colour is a common characteristic of all syphilitic eruptions which remain for any length of time without suppuration or ulceration.

The syphilitic eruptions which follow this first

efflorescence on the skin present a variety of appearances.

Lichen. The papillæ of the skin frequently are enlarged separately and scattered irregularly over the body. They form small hard elevations of a copper-colour, which terminate by desquamation or resolution. The enlarged papillæ are sometimes formed into groups, and then, occasionally, one much larger than the rest appears as a tubercle in the centre. This form of eruption has been described separately as *central tubercle*.

Syphilitic tubercle. The same tendency, which has been traced throughout, to the exudation of a fibrinous and albuminous material from the diseased blood, manifests itself particularly in this form of disease. The effusion takes place by a slow, gradual, and uninterrupted process, and becomes perfectly organized as in the papular eruption; each tubercle appears as a small, full, and tense conical eminence, covered with a red and shining cuticle, gradually, like other syphilitic eruptions, assuming a copper colour. The tubercles may be scattered singly over the surface, or they may be seen in groups.

The syphilitic tubercle may assume any size from a large pimple to a split pea or bean. Their shape is generally round, but often they are irregularly oval. The cuticle thrown off from the surface of syphilitic tubercles is peculiarly thin, white, and shining. It resembles small broken pieces of silver-paper. When syphilitic tubercles appear on mucous membranes, they are generally irregular in shape, flattened, and but

slightly raised above the surface. These peculiarities depend, in a great measure, upon the mucous membrane from which they spring being opposed to other parts, and consequently subject to a certain amount of pressure. The tubercular form of eruption on the skin generally occurs at a later period than the other eruptions, accompanied by the adhesive form of inflammation.

Syphilitic lepra commences like the mottled skin previously described, by the injection of circular groups of the papillæ of the skin. These may at first be seen separate, but soon the whole circular patch becomes equally involved; an effusion takes place into the substance of the skin, which causes a small flat elevation, the edges of which are sometimes raised higher than the centre. A large number of these patches, all perfectly circular, may form on any part of the body. They have, like other syphilitic eruptions, more or less of a copper-colour, but this is often partially masked by a thin layer of epithelium, which is thrown off in thin white and shining scales. Patches of syphilitic lepra sometimes bear a strong resemblance to flattened syphilitic tubercles.

Syphilitic psoriasis occurs in the form of oval or irregular patches slightly raised above the surface. These are generally of a brown or copper-colour, and covered with epithelial scales of various degrees of thickness. They are not depressed in the centre, and are often traversed by cracks which show no tendency to become obliterated. This disease is much more persistent in its character than syphilitic lepra. It is frequently

observed on the palms of the hands and soles of the feet, but it may occur on any part of the body. Patches of syphilitic psoriasis will sometimes remain for months without undergoing much alteration in appearance.

The eruptions now described may be classed together as resulting from secondary adhesive inflammation; they are essentially of the same character, and require the same mode of treatment. Not unfrequently they will appear upon the same patient at the same time, or will follow each other at successive periods. The tendency of these, as of other syphilitic eruptions, is to fade after a time, but to appear again and again, unless checked by treatment; after the disease has existed some time, they have, however, a greater disposition to assume an ulcerative or suppurative form, than to recur in their proper adhesive characters.

The same mode of treatment has been adopted generally for these eruptions, as for the primary disease to which they owe their origin

Mercury, in some form, is the remedy that alone can be relied upon. As in the primary infecting sore, it may be given internally, or may be used in the form of ointment rubbed on the skin, or may be administered as a mercurial vapour-bath.

In private practice it may be convenient to give mercury internally, on account of the little observation which this plan attracts, and the apparent ease with which it is followed. But, even with young men in the vigour of health, it will rarely happen that mer-

cury can be taken sufficiently long in this way to cure the disease : at the end of perhaps two or three weeks, the digestive organs become disturbed by the constant irritation of the medicine: an attack of diarrhœa perhaps supervenes, which may be checked for a time by opium : but if the internal administration of the mercury be continued, some other form of inconvenience will arise ; and, practically, the remedy has to be given up, in the very great majority of cases, before the patient is cured. When the eruption occurs under these circumstances at a subsequent period, it presents often a more troublesome, and worse form of disease than if no mercury had been given ; the long-continued irritation of the patient's digestive organs has produced an effect upon his system, and the diseased, as well as the healthy actions, of the body are consequently performed with enfeebled powers, and a lower type of affections are produced. From these considerations, the use of mercury internally has for several years past been abandoned at the Lock Hospital, in the author's practice.

The inunction of mercurial ointment is a very efficient way of bringing a patient's system under the influence of the drug ; and the action may in this way be continued for the requisite length of time, provided the laborious process which it entails and the dirty condition in which it leaves the skin are not objected to. In the treatment of cases of eruption on the skin it may, however, cause irritation in any of the spots upon which the ointment is rubbed, and may consequently have to be discontinued.

The mercurial vapour-bath is by far the least disagreeable mode of administering mercury ; at the same time that it enables the surgeon to regulate the action of the medicine with the greatest nicety, it does not endanger the patient's powers, nor produce irritation in any part of the skin. A full description of its mode of application will be given in a future lecture.

Iodide of potassium has very often been used for the papular, tubercular, and squamous syphilitic eruptions. From three to five grains are generally given in solution three times a day. This medicine certainly has a great power in removing syphilitic eruptions, and other forms of secondary and tertiary syphilis ; but it does not, according to my experience, cure the disease. The symptoms disappear, the surgeon and the patient often congratulate themselves on the result, but within a few weeks the eruption appears again in the same, or in a somewhat different, form.

Iodide of mercury is a very favourite medicine with many continental surgeons ; a grain may be made into a pill and given three times a day, and this dose may be gradually increased to three grains.

Mercury given in this form is more easily eliminated from the system than when given alone, and it also produces a more visible and decided effect upon the patient's system.

Iodide of potassium, or iodide of sodium, may be given internally, while the mercury is administered through the skin. These medicines probably then unite in the system, and produce much the same effect

as if the iodide of mercury were given. This mode of giving the iodide of mercury has, however, the great advantage of saving the digestive organs and the liver from any irritation from the mercury.

Sarsaparilla, useful in some forms of tertiary syphilis, has very little, if any, influence over the eruptions under consideration. Mr. Blomfield, formerly surgeon to the Lock Hospital, in his practical observations, says: "I solemnly declare I never saw a single instance in my life where it cured the disorder without the assistance of mercury." Mr. Pearson's observations led him to the same conclusion. We are, therefore, led to believe, although sarsaparilla is often given, even at the present day, for papular, tubercular, and scaly eruptions on the skin, that these affections, when they appear to have been benefited by that medicine, have in reality either in their natural course undergone a change for the better, or have been relieved by other medicines given at the same time as the sarsaparilla.

One source, and a very common one, observes Mr. Pearson, to which some of the mistakes committed upon this subject may be traced, is a persuasion that every morbid alteration, which arises in an infected person, is actually tainted with the venereal virus, and ought to be ascribed to it as its real cause.

Every experienced surgeon must, however, be aware that very little truth or reality exists in a representation of this kind. The contagious matter and the mineral specific may jointly produce in certain habits of body a new series of symptoms, which, strictly

speaking, are not venereal, which cannot be cured by mereury, and which sometimes are more to be dreaded than the simple and natural effects of the venereal virus. Some of the most formidable of these appearances may be sometimes removed by sarsaparilla, the venereal virus still remaining in the system ; and when the force of that poison has been completely subdued by mercury, the same vegetable is also capable of freeing the patient from what may be called the sequelæ of a mercurial course.

Pustular syphilitic eruption. When the syphilitic disease was first recognized at the end of the fifteenth century, the eruptions which it produced are frequently described as pustular. No very accurate description of these so-called pustules is, however, given ; and, considering the vague nomenclature of the day, it may appear doubtful whether these were not in reality vesicular eruptions, such as were observed in some of the fatal cases at Rivalta. Pustular syphilitic eruptions do occur, but they are very rare in unimpaired constitutions, as the first general eruption.

From constitutional causes, the primary disease which, in its normal course and in a healthy constitution, would present the characters of the adhesive form of inflammation, may soon after its first appearance suppurate, become phagedænic, or, in a few exceptional cases, it may be accompanied by a suppurating bubo. So the secondary form of disease, which, in a healthy person, would produce one of the eruptions characterized by the adhesive form of inflammation, may suppurate, ulcerate, or become phagedænic.

The most common form of pustular syphilitic eruption arises from the transformation of one of the forms of the adhesive into the suppurative inflammation. A papular or tubercular eruption will appear in the first instance, and the plastic material effused will be completely organized; the patient may then have an imperfect or irregular course of mercury, or his health may be deteriorated from other causes, and the eruption will then reappear, and the summit of each spot will contain a material incapable of being organized, which will become more or less perfectly transformed into pus.

The proper syphilitic pustular eruptions are divided by Cazenave* into three kinds, which he describes as follows :—

1. In one form the pustules (*psudraceous*) are either small and narrow, or of a large size, elevated, and round. They have a hard base, and are surrounded by a copper-coloured areola. The pustules themselves are of a dull reddish hue, and are developed in successive crops, presenting examples of the disease in its origin, maturity, and decline. Their progress is slow, and the inflammation attending them moderate; in some cases, however, it destroys the true skin, and leaves behind it a small, white, circular scar, depressed in the centre, and not larger than a pin's head. These scars, which have been erroneously supposed to follow papules, because the affection has been confounded with a papular eruption, are in a great majority of

* *Manual of Diseases of the Skin*, by Burgess.

cases the sequels of true pustules. This form chiefly occurs on the face and forehead, where it bears some resemblance to *acne rosacea* ; but it may appear on every part of the surface. The pustules dry off, and form a small grayish scab, which separates, and may leave behind it either a cicatrix, or some injection of the skin. The psudraceous pustules rarely terminate in ulceration, and then only when several of them have become confluent.

When seated on the limbs, these pustules present a different appearance. They are sometimes of the size of a lentil, numerous, but slightly elevated above the surface, with a hard base, and contain a very small quantity of yellowish-white matter, which presents a strong contrast to the copper-coloured elevation on which it rests. They are not followed by ulcers ; a thin scab forms on them, which is followed by a scar, or sometimes by a livid discoloration, or a small chronic induration.

This form of syphilitic eruption (called also *lenticular pustular* eruption) is the most common of all those which assume the pustular character, and is the one most frequently taken for the papular form ; doubtless in consequence of the rapidity with which it passes into the purulent stages, and the persistence of the induration which so early follows, and also on account of the peculiar arrangement of the eruption, which is always spread over a large surface in isolated elevations.

2. *Syphilitic impetigo*. This form is usually preceded by slight malaise, and commences with redness of the affected points ; this is followed by small col-

lections of purulent matter, forming irregularly-shaped patches, more or less confluent, resting upon surfaces of a coppery-red colour, which are soon covered by scabs, irregular in shape, harder, darker coloured, and more adherent than those of common impetigo. Beneath these scabs are characteristic ulcerations, which are followed by scars, varying in extent and shape. This is the form called *pustulo-crustaceous* syphilitic eruption. It may affect any part of the surface, but more frequently attacks the face. It sometimes appears on several places at the same time, but has no tendency to spread to neighbouring parts. It is always secondary.

3. In the third variety of syphilitic pustular eruption, the pustules are still larger (*ecthyma syphiliticum*), and resemble those of ecthyma. They are few in number, isolated, and chiefly occur on the limbs, and especially the legs. They appear at first under the form of a large livid spot, about the size of a shilling, or larger. The epidermis is now raised over a considerable portion of the spot, by a grayish, sero-purulent matter; the elevation increases slowly, and is always surrounded by a broad copper-coloured areola, quite different from that of ordinary ecthyma, which is of a violet-red. After a few days, the pustule breaks, and the contained matter concretes into a dark hard scab, which gradually becomes thicker, and fissured at the edges, being of a circular shape. All this occurs without any local inflammation: there is little heat, and no pain; the scabs are extremely tenacious, and may remain for an indefinite time without separating.

When they do come away, we find underneath them deep round ulcers, with sharp-cut hard edges, of a purple colour, whilst the bottom is grayish and ill-looking. They have little tendency to spread. The scabs now gradually form again, and are frequently renewed, until, under the use of appropriate means, they become thinner, while the ulcers get clean and heal, leaving behind them circular and lasting cicatrices.

This is the most common form of the syphilitic pustular eruption, and the one which usually occurs in new-born children. Here the pustules are broad, superficial, flat, of an oval shape, and in great numbers ; the scabs are dark and thick, and conceal small ulcers underneath. The countenance of the patient presents, at the same time, a peculiar appearance, which it is difficult to describe : the skin is of an earthy hue ; the child is emaciated, the face is drawn in and marked, like that of an old person, by numerous wrinkles, while the whole body exhales a most disagreeable odour.

Treatment of pustular syphilitic eruptions. It will, I believe, be found a universal rule in the treatment of both primary and secondary syphilis, that mercury will not agree with patients during the time that active suppuration, on however small a scale, is taking place. Other remedies have then to be sought ; among these the iodide of potassium occupies the first place. This remedy may be given alone, or in combination with iron or other tonics. The usual dose is from three to five grains, three times a day, in solution. This medi-

cine has a marked effect in removing the symptoms in almost every form of secondary syphilis. Practically this is a great advantage ; but it certainly does not cure the disease in the same way as mercury does, when that medicine is properly administered and can be conveniently borne.

Larger doses of the iodide of potassium are often given, as much as ten or fifteen grains three times a day ; but it is doubtful whether these doses possess any advantage over the smaller ones.

Guaiacum in the form of decoction was supposed, during two centuries, to possess antivenereal properties ; and we are told by Mr. Pearson that its reputation was supported by well-attested narratives in a great number of instances where no mercury had been employed, or where that medicine had done no permanent good, or where the patients had suffered injury from it instead of finding advantage.

After a careful investigation of the properties of guaiacum, the following are Mr. Pearson's conclusions with regard to it. The decoction commonly excites a grateful sensation of warmth in the stomach ; it gives a sense of dryness to the mouth, and creates thirst ; it also increases the natural temperature of the skin, and renders the pulse more frequent. If the patient drink the decoction warm and lie in bed, it generally proves moderately sudorific ; and this effect may be heightened as much as we please, by employing the hot bath, the vapour-bath, antimonials combined with opium, or the pulvis ipeacuanhæ compositus. When the decoction has been continued during ten or twelve days, in

the quantity of four pints each day, the patient often complains of its producing the heartburn, accompanied with flatulence ; and he is usually costive during the whole course. If the person expose himself freely to the air while he is taking this medicine, the secretion of urine will be augmented, but no sensible alteration will take place in the state of the skin.

When I have exhibited the decoction of guaiacum in pains of the bones, as they are called, confining the patient at the same time to bed, and enjoining a diet consisting of fluids only, I have rarely seen any beneficial consequences result from the use of it, except where it acted as a sudorific ; and in this respect I think its qualities manifestly inferior to antimony or volatile alkali. In several instances, after persisting in a course of it during four or five weeks, I have not gained any material advantage ; and I have remarked, that when the *dolores osteopii* were not connected with some morbid alteration of the structure of a part, this medicine was of little avail. When the strength and vigour has been reduced by a successful mercurial course, with confinement to the house, and where a thickened state of the ligaments or of the periosteum remains, or where there are foul indolent ulcers, these sores will often heal, and the enlarged membranes will subside, during the administration of this decoction.

The decoction of guaiacum will often suspend the progress of certain secondary symptoms of lues venerea for a short time, such as ulcers of the tonsils, venereal eruptions, and even nodes ; but I never saw one single

instance in which the powers of this medicine eradicated the venereal virus. It has been recommended by many people to combine guaiacum with mercury, with the intention of improving the specific powers, and of counteracting the injurious effects, of that mineral ; the advantages to be derived from this compound mode of treatment are by no means well established, for guaiacum is certainly no antidote against syphilis.

Mr. Pearson's opinion with regard to the virtues of sarsaparilla, founded as it was upon a very large experience and a great number of experiments, is perhaps as valuable and correct as can be obtained. While I reject it, he says, as a specific, I would by no means disparage it as a medicine possessing no valuable qualities. In those cases where the malignant powers of the virus have proved materially prejudicial to the health, so that the patient cannot enter upon the use of mercury with propriety, the decoction and powder of sarsaparilla will often retard the destructive agency of the venereal poison, and repair the breaches made in the constitution : it may be sometimes given with advantage during a course of mercurial frictions, when it does not occasion a determination to the bowels ; and it will almost invariably remove many of the most troublesome sequelæ of a course of mercury.

Nor are the salutary properties of the sarsaparilla-root useful in those diseases only that are either immediately or remotely connected with syphilis ; its beneficial effects are often demonstrated in the treatment

of foul, untractable, spreading sores in more than one form of scrofula.

In all diseases characterized by want of power, bark may be advantageously employed ; and it may often be most beneficially used in cases of syphilitic eruption, where, either from some constitutional peculiarity, or from the long continuance of the disease, or from the debilitating effects of the remedies employed, a want of power is manifested in a patient's system. It may conveniently be given during a mercurial course, or after the mercury has been discontinued. The beneficial effects of bark are, however, most manifest in cases where destructive ulceration or sloughing occurs.

Opium is, next to mercury and the iodide of potassium, perhaps the most useful remedy in the treatment of venereal diseases ; and with regard to it Mr. Pearson's opinion may again be taken. He says : An experience of nearly twenty years has taught me, that when it is combined with mercury, the proper efficacy of the latter is not in any measure increased ; that it would not be safe to rely upon a smaller quantity of the mineral specific, nor to contract the mercurial course within a shorter limit, than where no opium has been employed.

This representation will not, I presume, admit of controversy ; yet we frequently hear people expressing themselves upon this head, as if opium manifested some peculiar qualities, in venereal complaints, of a distinct nature from its well-known narcotic properties, and thus afforded an important aid to mercury in the

removal of lues venerea. Perhaps it may not be un-
useful to disentangle this subject from the perplexity
in which such indefinite language necessarily in-
volves it.

Opium when given in conjunction with mercury, by
diminishing the sensibility of the stomach and bowels,
prevents many of those inconveniences which this
mineral is apt to excite in the primæ viæ ; and thus
its admission into the general system is facilitated.
Mercury will likewise often produce a morbid irrita-
bility, accompanied with restlessness and insomno-
lescence ; and it sometimes renders venereal sores
painful and disposed to spread. These accidental evils,
not necessarily connected with venereal disease, may be
commonly alleviated, and often entirely removed, by a
judicious administration of opium ; and the patient
will consequently be enabled to persist in using the
mineral specific. It must, however, be perfectly ob-
vious, that opium in conferring this sort of relief, com-
municates no additional virtues to mercury ; and that
in reality it assists the constitution of the patient,
not the operation of the medicine with which it is
combined.

The salutary effects of mercury as an antidote
may be diminished, or lost, by the supervention of
vomiting, dysentery, &c. Opium will often correct
these morbid appearances, and so will spices, wine, an
appropriate diet, &c. ; yet it would be a strange use of
words to urge, wherever these articles of food were
beneficial to a venereal patient, that they concurred in
augmenting the medicinal virtues of mercury. It may

be supposed that the majority of medical men would understand by the terms, "to assist a medicine in curing a contagious disease," that the drug conjoined with the specific actually increased its medicinal efficacy ; whereas, in the instances before us, it is the human body only which has been aided to resist the operation of certain noxious powers, which would render a perseverance in the antidote prejudicial or impossible.

The soothing qualities of this admirable medicine can scarcely be estimated too highly ; yet we must beware of ascribing effects to them which have no existence ; since a confidence in the antivenereal virtues of opium would be a source of greater mischief than its most valuable properties would be able [to compensate.

SECONDARY SYPHILITIC VESICULAR ERUPTIONS.

From some peculiarity in the patient's constitution, or from some want of power in carrying out the natural processes of the disease, the syphilitic eruption may be accompanied by an effusion of serum only. The diseases thus produced have received a variety of names, according as they have resembled other diseases of the skin. Thus we have described *syphilitic herpes*, *syphilitic eczema*, the *varicelloid syphilitic eruption*, the *impetigenous syphilitic eczema*.

When the effusion of serum beneath the cuticle is larger, bullæ are formed instead of vesicles, and then the disease is described as syphilitic pemphigus. These

all are only accidental modifications, and do not belong to the essential nature of the syphilitic disease. They may pass one into another, and be preceded or followed by other forms of eruption. They do not, consequently, require any separate and distinct mode of treatment.

LECTURE XV.

SECONDARY SYPHILIS, CONTINUED.

ABOUT the period when a patient's constitution gives evidence of being affected with the syphilitic poison, the original primary chancre will often ulcerate in a way that it had not done before ; at this period also, as the consequence of that ulceration, the corresponding lymphatic glands will become affected, and sometimes suppurate, as has already been explained. These ulcerations must be regarded as altogether of a secondary nature ; and they are frequently healed with much difficulty. The secondary inflammation of the skin may, in like manner, in any situation terminate in ulceration ; but this ulceration is generally not attended with suppuration of the corresponding lymphatic glands. The absorbent glands, which receive the lymphatics from the ulcers now under consideration, become often enlarged, especially at the back part of the neck ; but they do not, as a rule, suppurate.

Large portions of skin are often destroyed by these secondary ulcerations ; and if they occur upon the face, they leave great disfigurement.

No remedy is so efficacious for these secondary ulcerations as the calomel vapour-bath. It generally happens, on account of the rapid progress of the ulceration in these cases, that it is advantageous to bring a patient's system rapidly under the influence of mercury; and then the general calomel-bath should be used every night, taking care to have the parts ulcerated as much exposed to the vapour of calomel as possible. But in cases where a general mercurial affection of the system is not desirable, a local fumigation will answer the purpose. Different plans are adopted for the local calomel fumigation; the only essential condition is, that the volatilized calomel should come in contact with the ulcerated surface which it then covers in a state of most minute subdivision.

The ordinary fumigating-lamp, used without water, answers the purpose of local fumigation extremely well. Five or ten grains of calomel may be volatilized, and the ulcerated part should then be held directly over the lamp. The vapour of calomel ascends perpendicularly, and is deposited upon the first surface with which it comes in contact.

There is a form of ulceration of the skin of patients affected with secondary syphilis which does not depend upon the direct influence of the syphilitic poison, but which is extremely liable to be mistaken for those that do. The ulcerations now referred to generally occur where some portion of bone about the skull has become affected, and where, either by direct irritation or by reflex action, the nerves going from the brain, or

spinal cord, are kept in a chronic and persistent state of morbid irritability.

CASE. Mr. —, a tradesman in the city, came under my observation on the 3rd of March, 1859. He gave no distinct history of any primary syphilitic affection, but a well-marked and accurately-defined induration existed at the upper part of the root of the penis.

Eight years previously, an ulcer made its appearance on the forehead, immediately over the left eye. This spread rapidly in every direction; about the same time the skin over the right elbow began to ulcerate. This ulceration extended upwards and downwards, and involved the skin of the whole arm. The ulceration on the forehead healed, but that on the arm had never entirely done so. Three years after the commencement of this ulceration, he had a severe convulsive fit; he was not insensible, but there was violent contraction of the muscles of the jaw and back. During the continuance of the spasm no food could be administered. The muscles of the face were likewise affected.

In the year 1857, it became evident that the bones of the skull were extremely diseased. He was now one day suddenly seized with violent spasmodic contractions of the right side of the face, which lasted half-an-hour, without loss of consciousness. Four months later, a second attack followed, of a more severe character. This lasted six hours and a half, was accompanied by partial paralysis of the right side of the body, and tremor of the limbs. Subse-

quently to this, several milder attacks occurred, and increased in frequency. He always had a warning of these attacks. His face became flushed, there was a difficulty of articulation, and tremor of the muscles on the right side of the face.

This patient underwent a great variety of treatment by different medical men, and was, for a considerable period, out-patient at St. Bartholomew's Hospital. On the 13th of September, 1859, he was admitted into the Lock Hospital; an ulcer still at that time existed on the outer side of the right forearm. The cicatrized skin from the shoulder to the wrist, firmly bound down the parts beneath, and the arm was, in consequence, very much reduced in size. There was no motion either in the elbow or wrist joints. The hand was greatly swollen and cedematous. The frontal and parietal bones were in several places denuded. Extensive portions of their outer tables were either carious or necrosed.

All ordinary remedies having been previously exhausted, this patient was placed under the influence of chloroform, on the 25th of October, and the trephine applied in several places over the right parietal bone. In the part apparently the most diseased, the whole thickness of the skull was removed, to the extent of one crown of the trephine. In other places, the outer and middle tables only were taken away. The exposed dura-mater, where the whole thickness of the skull had been removed, bled freely, and did not appear to be covered by any deposit. The surface of bone which lay in contact with it, was slightly eroded,

and was also perforated by numerous very minute holes.

October 26. Had slept well during the night.

November 5. Had two fits last night similar to those he had had previous to the operation. They were reported by the house-surgeon as "of an epileptic character, accompanied by loss of voluntary power."

November 12. General health improved. Healthy granulations from the scalp. The ulcer on the arm showed a disposition to heal.

November 27. Had a slight fit which lasted about a quarter of an hour. During this time he was quite conscious, but the lower jaw was fixed, and the muscles of the face were slightly convulsed. From this time until he left the hospital, on the 23rd of December, there was no recurrence of the fits. The wounds in the scalp assumed a healthy aspect, although there were still some small portions of bone which remained uncovered. The wound in the arm became reduced to the size of a fourpenny piece, and ultimately healed.

SECONDARY SYPHILITIC DISEASE OF MUCOUS MEMBRANES.

When a portion of mucous membrane becomes exposed for any length of time on the surface of the body, it gradually assumes the characters of skin, and becomes covered by cuticle. Secondary syphilitic eruptions here present the same characters as upon the true skin; but in the mucous membrane itself the appearances of these eruptions are necessarily modified. These membranes are little prone to the adhesive

form of inflammation; and although they may be affected at the same time and from the same cause as the skin, yet the peculiar characteristics of the adhesive inflammation will not in them be generally fully developed. In those situations, however, where the mucous membrane joins the skin, and especially when from exposure and irritation it has become thickened and assumed the nature of skin, the different forms of syphilitic eruption will be well marked.

Every form of syphilitic affection of the skin has its counterpart on the mucous membranes; but the appearances will be modified by the comparative thinness of the structure, by the absence of cuticle, and by the little disposition these parts have to take on the adhesive inflammation. There are some of these which require a particular notice.

Mucous tubercles correspond to tubercles upon the skin. They have generally a more extended base, with a flat surface, or the edges raised above the centre. Although dependent in their origin upon the adhesive form of inflammation, yet they soon suppurate, and so far lose their original character. Mucous tubercles are much more easily influenced by local treatment than tubercles on the skin. A solution of bichloride of mercury, one or two grains to the ounce, or some mercurial ointment, or calomel-powder, are very effective applications. These mucous tubercles affect the inside of the cheeks, the arches of the palate, the lips, the parts of generation, and the rectum. In the latter situation they are very likely to be mistaken for warts, from which, however, they ought carefully

to be distinguished. Both may be communicated by impure contact: but the mucous tubercle is a secondary syphilitic affection, requiring constitutional treatment; the wart is a local disease, requiring only local applications.

Deep ulcer of the tonsils commences in general without producing pain or other inconvenience. The mucous membrane is of a livid red colour, and passes rapidly into a state of ulceration. The ulceration spreads, extending in every direction alike, and often produces a deep circular ulcer with sharp edges. It has often a yellowish base; but this varies according to the nature of the secretion which adheres to it. This ulcer has been supposed to be particularly influenced by the bichloride of mercury given internally; an eighth of a grain may be given in decoction or tincture of bark three times a day.

The mucous membrane of the pharynx and larynx is liable to be affected in secondary syphilitic disease, the former probably more frequently than the latter; but on account of the importance of the parts concerned, the latter has been described separately under the name of *syphilitic laryngitis*. This disease is sometimes accompanied by a fixed pain on a level with the thyroid cartilage, and there is occasionally evident swelling externally; the voice, breathing, and deglutition may all be more or less interfered with. There is generally a hacking cough with attempts to expectorate, and some puriform matter streaked with blood is occasionally expelled.

. If the disease continues, it is sometimes accompanied

by emaciation, night-sweats, and dangerous exhaustion of the patient's system. Portions of the hyoid bone, or of the thyroid or cricoid cartilages, may be destroyed by this disease, and pieces of those cartilages have been known, when disengaged, to pass down the bronchi into the lungs.

Syphilitic iritis has always occupied an important position in the description of secondary symptoms, both on account of the importance of the parts concerned, and also because in the eye alone, we are enabled to see the alterations that take place in the interior of the organ; and from what we there see we are enabled to judge of similar changes that occur elsewhere.

The following is Mr. Tyrrell's description of iritis, and it is given at length, as affording a good illustration of the tendency to plastic effusion, which may be traced throughout the whole course of this disease:—

Slight pain and redness of the eye are usually the first symptoms which induce a patient, subject to iritis to seek medical aid; but frequently, from the little suffering experienced, the disease is allowed to proceed until the vision becomes impaired, and objects appear as if seen through a gauze or mist; and generally, numerous gray or dark *muscæ*, or spots, are also perceived in the field of vision at the same time. This indicates extension of mischief to the choroid tunica. In some instances scarcely any pain is present, not only at the commencement of the disease, but throughout its progress; whilst in other cases the suffering is considerable, and the patient experiences

an aggravation of suffering towards evening or during the night, when the globe is tender to the touch ; and the pain often extends to the temple, forehead, or cheek. This pain is, however, not occasioned by the disease in the iris, but by extension of it to the sclerotic coat, which soon participates in the diseased action. These symptoms are increased by the recumbent posture, or by a full meal, or by any thing which augments the determination of blood to the part. Frequent exposure to light is painful, causing an increased flow of tears ; sometimes the intolerance of light is so great that the patient can scarcely bear an examination of the eye ; whilst occasionally the patient does not suffer at all, even from the presence of a bright light. Intolerance of light is by no means a constant symptom of iritis.

As the disease advances, the dimness of vision increases, until perception of light is lost ; at the same time the pain gradually augments. Inordinate lachrymal secretion only occurs when intolerance of light exists.

The first change perceptible is in the iris, which loses its brilliancy and acquires a dull aspect, absorbing the rays of light instead of reflecting them, as it naturally does. The pupillary aperture also becomes contracted, and the motions of the membrane are impeded, so that the pupil dilates and contracts slowly on the admission or withdrawal of light. If the iris be naturally of a gray or blue colour, it soon assumes a greenish hue, from a deposition of fibrin into its texture ; if, however, the natural aspect of the part be brown or

hazel, scarcely any change of colour occurs in the commencement of the disease, but in its more advanced stage the iris acquires a reddish-brown tinge.

The aqueous humour often appears cloudy, from the membrane becoming slightly thickened, in consequence of the morbid action extending to it.

What is considered as one of the principal diagnostic marks of the disease is a zone of vessels around the margin of the cornea, which at a short distance gives the appearance of a uniform dull-red belt; but when closely viewed, the zone is found to be most dense in colour close to the cornea, and to be gradually shaded off at its larger circumference. It is composed of numerous and closely compacted minute vessels in the sclerotic tunic, which are filled with red blood; the courses of these vessels are nearly straight and parallel, passing from the margin of the cornea towards the orbital margin. This zone varies much in extent and in depth of colour, as the disease is mild or severe. The free anastomosis which exists between the vessels of the iris and those of the sclerotic through the ciliary ligament, readily explains this appearance. In some cases a gray line exists between the margin of the cornea and the red zone, which line is sometimes complete, occupying the entire circumference of the cornea; but it is occasionally partial, and situated at the temporal and nasal sides, or very rarely above and below the margin of the cornea. Usually, a few conjunctival vessels are also found carrying red blood; they are of much larger size than those forming the zone, are more tortuous in their course, and of a different

colour ; by slight pressure with the point of the finger, they can be made to move over the vessels of the sclerotic.

As the disease advances, the aspect of the iris becomes duller, its colour more altered, and its motions more impeded ; the pupil loses its circular figure, and becomes irregular, from partial adhesion of its margin to the anterior capsule of the lens (*synechia posterior*) ; the vascular zone enlarges and assumes a deeper hue, the aqueous membrane gets more and more turbid, and small tubercles of fibrin are frequently deposited on the surface of the iris ; most commonly at or near its pupillary margin, sometimes at its larger circumference, and occasionally between these two positions. The effused matter is at first of a light-yellow colour, but subsequently acquires an orange or reddish-brown aspect ; and this change takes place more or less quickly, according to the rapid or gradual progress of the disease. The tubercles of fibrin are rarely formed together, but one appears soon after another ; and the deposition of fibrin is sometimes so great as nearly to fill the anterior chamber : usually, before any distinct tubercles are to be seen, an effusion of fibrin takes place at the pupillary margin of the iris, so as to cause partial adhesions between this part and the anterior capsule of the crystalline lens. In very severe cases, after several tubercles have been formed on the iris, some of them suppurate, and discharge their pus by ulceration into the anterior chamber, and onyx is produced.

The disease is usually more rapid in its progress and altogether more severe when connected with specific

taint ; therefore the symptoms which I have described are more quickly developed. The peculiar colour of the fibrin which forms the tubercles does not, however, depend on any peculiarity in the disease independent of its acuteness ; if the local action be moderate, the effused fibrin remains of a yellow colour for a long period ; but if the local action be great, the fibrin deposited soon becomes organized by vessels carrying red blood, and thus it acquires a reddish-brown colour. The disease connected with specific taint being usually more severe than that of the idiopathic kind, the fibrin is more frequently found of a reddish colour in the former than in the latter instance.

The early stage of this disease may be arrested and subdued very readily by the exhibition of mercury ; and in the severe and aggravated cases by a proper administration of this remedy a useful degree of vision may be restored in a large majority of cases, and in almost all, where the disease has not produced disorganization.

Mercury appears not only to arrest the inflammatory action, but further to promote absorption of the fibrin, which is the common product of the morbid action in the iris, and which occasions changes destructive of vision. If this fibrin has not become organized before the commencement of the mercurial treatment, nearly perfect vision may be restored, although little or none should exist before treatment ; but if the organization of the new deposit has taken place, the extent of recovery of vision, by medical treatment alone, will be very doubtful.

In the milder forms of iritis, or before the morbid action has occasioned irregularity of pupil, or formation of tubercles, small doses of mercury in combination with opium, to prevent action on the bowels, are proper, in the proportions of one or two grains of the former to a third of a grain of the latter, every six or eight hours: besides this, however, attention should be given to the secretions, the diet should be very moderate, and the pupil maintained in a dilated state by the application of extract of belladonna to the brow; or better, the dropping of a solution of atropine (gr. ij, iij, ad aquæ ʒj) upon the conjunctiva, to prevent any adhesion from forming between the pupillary margin of the iris, and the anterior capsule of the lens whilst the pupil is contracted, when the adhesions would be more likely to interfere with the vision. The patient should be carefully watched, in order that the quantity of mercury may be increased, should the iritis advance, or that it may be lessened as the disease yields to its influence.

In the more acute forms or more advanced stages of the disease, mercury should be given in larger doses and at shorter intervals; and at the same time, if there be much affection of the sclerotic and conjunctiva, with pain of a continued kind, much good will result from the local abstraction of blood by a cupping-glass to the temple, or by leeches applied to the eyelids. The principal object should be to produce mercurial influence as speedily as the condition of the patient will permit.

The largest quantity of mercury, says Mr. Tyrrell,

which I have given for iritis has been five grains of calomel combined with a small quantity of opium, every four hours, and thus continued to fourteen doses.

This was in the case of a young woman who was the subject of iritis connected with syphilitic taint ; the disease existed in both eyes, and so much fibrin had been deposited as nearly to fill the anterior chamber in each eye, and completely to obscure the pupils : she had, however, perception of light. The fibrin was of a light-yellow colour ; she had also a plentiful crop of tubercular eruptions on the skin, and some slight affection of the mucous membrane of the throat.

Immediately that the system became affected by the mercury, the progress of the inflammation became arrested, and a rapid absorption of the fibrin subsequently took place, so that within ten days from the commencement of the treatment the recovery from the iritis was complete, and she could see to read a minute print. Eventually it would have been difficult to have told that iritis had ever existed ; for the irides, which were naturally blue, became brilliant, the pupils were perfectly round, and the motions of the irides natural. The treatment also removed the evidence of syphilitic taint, with the addition of sarsaparilla, which she took for several weeks.

The mercurial treatment recommended above by Mr. Tyrrell, is much more energetic than that adopted in the present day.

In some cases a syphilitic iritis is a far more important and complicated disease than the foregoing remarks would suggest. Within the limits of these

lectures we cannot do more than glance at the advances recently made in our knowledge of these affections, by the German ophthalmic surgeons in particular.

One of the most important indications to be fulfilled is, to prevent the occurrence of synechia, by the timely and energetic use of mydriastics. These adhesions are injurious in two ways: directly, by interfering with vision through the opacities they cause, and the impaired mobility of the iris: remotely, by inducing a marked predisposition to a recurrence of iritic attacks, and these again to serious choroidal affections, eventuating in great pain from tension of the eyeball and loss of sight.

Græfe (and the opinions and practice of most of our leading ophthalmic surgeons concur with him) urges the frequent instillation of a solution of atropine, in preference to the endermic use of belladonna, inasmuch as the dilatation of the pupil depends upon the permeation by the drug of the aqueous humour. In rare cases of such severity that the most rational treatment by internal remedies, alone, appears innocuous, and a closed pupil, bulging iris, or choroidal changes, are threatening, or have already supervened, paracentesis of the anterior chamber, or the performance of iridectomy are indicated. Both von Græfe and Mr. Bowman have shown the indubitable value of the latter in relieving the tension of the eyeball, and arresting the progress of the eye to destruction.

TERTIARY SYPHILIS.

In tertiary syphilis there is the same tendency to

the effusion of a plastic material from the blood that we have traced throughout. Indolent nodules are formed in the skin, which very slowly desquamate, or ulcerate, or become phagedænic. In the cellular tissue circular deposits are formed, which after a considerable time become softened down. The skin over them breaks, and a ragged ulcer is left, with overhanging edges, the cellular tissue having been destroyed to a greater extent than the skin.

In the substance of the heart, in the liver and other internal organs, even in the structure of nerves, the same deposit may sometimes be found. These formations occur in irregular masses, often of a more or less circular form, and may remain probably without undergoing any material change for a very considerable period. There is little doubt but that, under appropriate treatment, they may be entirely reabsorbed. These tubercles must be distinguished from the results of ordinary secondary inflammation, such as occur after surgical injuries and operations. But, I believe that patients labouring under syphilis, even in its tertiary forms, are more liable to secondary deposits after surgical operations than others.

Tertiary syphilis, in one form or another, may probably affect every structure of the body; but the diseases thus produced so much resemble those that arise from other causes, that from the morbid changes alone, independently of the history of the case, it would often be impossible to recognise their true nature. A general description of some of the most important tertiary syphilitic affections will now be given.

Diseases of skin and mucous membranes. These consist mainly of ulcerations of a peculiarly unhealthy and persistent character, attacking various parts of the body, but chiefly portions of the face, nails, ears, and mucous membranes of the various openings of the body. In many instances no secondary affection of the part involved has preceded these ulcerations; whilst in others, and especially in those which are found on the face, the disease seems to consist of an extension of ulceration from a previously existing secondary sore. The parts of the face usually attacked are the nose and lips. A tubercular nodule is commonly first noticed. This becomes a hardened copper-coloured mass, varying in size from the eighth of an inch and upwards. It often remains for many months without undergoing any material change, and then perhaps in some temporary depression of health it will break out suddenly into an open sore, and extend itself by rapid ulceration; or the ulceration may be more slow and gradual, eating, perhaps, through the cartilages of the nose, and reaching to its inner cavities, with more or less destruction of the sense of smell, and a decided change of voice. Occasionally the ulceration begins from within, and extends outwards, producing similar destruction of parts. If the ulcerative action should not be arrested, it may progress to the deeper structures, attacking the bones of the nose and all the parts in its neighbourhood, and completely destroying the sense of smell.

The disease of the lips commonly begins with a few cracks in either lip, which, like the preceding, may remain for weeks or months, and then ulcerate extensively.

The parts about the nails are liable to similar ulcerations. That most generally observed is an ulceration of the root of the nail, of an obstinate and unhealthy nature, of a dark, almost black colour, and surrounded by a deep copper-red margin. It is a form of onychia extremely difficult to eradicate, as the ulceration is very apt to return. It occurs either on the fingers or toes, though most commonly on the former. Ulcerations also frequently occur between the toes, and are characterized by a very offensive discharge. The best treatment for syphilitic onychia, is to scrape the nail quite thin; rub it with nitrate of silver, and wait until it separates. At the same time, a lotion of nitrate of silver should be applied constantly, by which the extremity of finger or toe becomes black, hardened, and little sensitive. Sometimes the nail can be easily separated in this way. If not, it must be enucleated, and it is the shortest course to remove the fold from which the nail springs, or destroy it by caustic; otherwise there is sure to be a reproduction of it. Lotions of liq. sodæ chlorinatæ are very useful, followed by red oxide of mercury ointment, or by the application of a solution of nitrate of silver. It is essential, in most cases, that the patient should take mercury; and local calomel fumigation has been found useful. When the nutrition of the skin is affected, the bulbs of the hairs are involved. The hair, being imperfectly nourished, becomes cracked, dry, and split at its extremities. It often breaks off short at the roots, and comes away in considerable quantities in the comb. When the bulbs are much diseased, the hair is not repro-

duced, and partial or even entire baldness is the result. This has been called *alopecia*. It may affect the beard, the eyebrows, and eyelashes. A case is recorded by Vidal where it was complete, causing total loss of hair over the whole body.

The mucous membranes most liable to attacks of tertiary syphilitic ulceration are those covering the tongue, gums, rectum, vagina, and os uteri. There is nothing remarkable about the two former, except that, as the parts are more freely supplied with blood, the action is apt to be more energetic and rapid than in other cases. Accordingly ulcerations of the tongue are often seen of large size, even soon after it has become affected. When the gums are diseased, the teeth frequently become involved and lost.

The following remarkable and highly interesting case is taken from Dr. Marston's most valuable paper in the last volume of the *Medico-Chirurgical Transactions* :—

Gr. D. C, aged twenty-eight. Upon April 23rd, 1856, this man had connexion. Upon May 18th following he was admitted into hospital with a glandular swelling in each groin. He discovered afterwards that two soldiers had caught a venereal affection from the same woman. There were many glands affected in both groins, and one upon the left side inflamed and threatened suppuration, and was opened by caustic potash. Subsequently, an abscess appeared in the right groin, and was similarly treated. No sore of any kind existed on the penis, nor was there any urethral discharge, or cicatrix, or mark on the penis. Six

weeks afterwards he suffered from a red rash over the whole body, and the skin came off in scales. This exanthem was followed by the appearance of numerous pustules, and iritis of the right eye. For these symptoms he was treated by mercurials for a fortnight, but his mouth was not affected. He subsequently took large quantities of iodides in the decoct. sarsæ comp. At the end of two months he was discharged cured (?). About seven or ten days afterwards he was re-admitted with "rheumatism in all his bones," particularly the legs. The rheumatism prevented him sleeping at night. After about four months further treatment he was discharged cured, but he has never enjoyed the health he had before these attacks.

In the beginning of 1858 his teeth began to decay in the most curious manner. A dark spot would first appear upon the front aspect of the enamel, close to the gum. The lateral incisors of the upper jaw were first affected, and disease of the remaining front teeth speedily followed. This discoloured spot became the seat of caries, and a minute circular hole resulted, situated in the middle line of the tooth, bordering upon the gum. The disease in each tooth gradually advanced from before backwards, extending laterally at the same time, and making its way in a very definite manner, until the line of caries passed through the tooth, and severed it at its junction with the fang. He has lost the upper teeth in this way. The two central incisors, however, are not quite destroyed; the disease in these has nearly severed the crown from the fang. The lower teeth have commenced to be affected

in a similar manner. A line of caries has appeared upon the incisor and canine teeth, exactly at the junction of the crown and fang, and threatens their destruction.

Dr. Marston informs me that he has seen this very peculiar disease of the teeth follow the same course in two other cases. He directs attention to an interesting paper, read June 25th, 1862, by Dr. Roberts of Manchester, upon two cases of double facial paralysis, apparently due to syphilitic disease, wherein there was a curious destruction of the teeth; and he refers to a similar case by the late Dr. Todd, in his volume of *Clinical Lectures upon Nervous Diseases*.

Syphilitic inflammation, or rather ulceration of the intestines, is now recognized by many physicians as an occasional cause of long-continued dysentery. The part commonly involved is the colon, and occasionally the small intestine near the ileo-cæcal valve.

Diseases of periosteum, bones, and joints. Perhaps the most important of all these tertiary affections are those which attack the bones and their coverings.

They may be included under the heads of periostitis, acute and chronic; nodes and exostoses; inflammation of bone; caries and necrosis.

Acute periostitis is a rather rare result of syphilis; but when it occurs, it is apt to be extensive and destructive. Chronic periostitis is very common. It is attended with great pain at night, and aching at every change of temperature or weather.

The interior as well as the surface of bones may be affected. The cancellous structure becomes thickened,

condensed, and often much harder than natural. Fixed and long-continued pain in the bone, without much tenderness of its surface, characterises this condition. The pain appears to arise from the pressure produced by the increased formation of bone, and is relieved, often permanently, by making an opening through the crust of the bone with a trephine. No fluid is found in the interior of the bone on these occasions.

Caries and necrosis of bone occur as tertiary forms of syphilis in the same parts as from other causes; the former in the cancellous structure, and the latter in the shafts of long bones or the dense parts of others. Necrosis is generally the result of acute periostitis. Caries is almost always produced by an extension of ulcerative action from soft parts to the bones. Thus, the bones of the ear are often affected by ulceration of the cartilage or lining membrane of the meatus; the bones of the palate, from ulceration of the mucous membrane lining it; the bones of joints, from ulceration of the surrounding soft structures. It is very rare for caries to begin as a primary disease, at least in tertiary syphilis. During this ulceration of bone, serious destruction may take place. Joints may be disintegrated, the organs of hearing lost, and the bones of the nose or palate destroyed. The bones of the skull are usually affected in their outer and middle tables only. The diploe becomes filled with bony matter, and then ulcerates or dies. Sometimes, although rarely, the inner table is affected to a greater extent than the outer or middle. Effusion may then take place between the

bone and dura mater, and the disease may extend by continuity of action to the brain. The brain may then become affected with red softening, and a part of it be ultimately softened down to the consistence of cream. In these cases it is the surface of the brain which is primarily affected ; but in those cases where the brain has been supposed to be affected independently of the bones, some of the central portions, such as the corpora striata, are the parts that have been found softened.

Diseases of glands. Of these the only gland requiring especial notice is the testicle.

Syphilitic Orchitis. This disease was not noticed by Hunter : Astruc alludes to it, and it has been described by Bell, Sir Astley Cooper, Velpeau, Curling, and others, more particularly by M. Ricord.

It occurs as one of the later symptoms of constitutional syphilis, following, generally, long after those manifestations denominated secondary, such as the squamous affections of the skin, iritis, etc. It may, therefore, be regarded as standing, in reference to time, with the tertiary phenomena, and as the result of a syphilitic cachexia.

Symptoms. Possessing some of the features which are common to almost all enlargements of the testicle, it yet contrasts with these in some important particulars. It is generally quite painless in its origin and progress. Very rarely, indeed, do patients complain of pain, or any more uneasiness than can be accounted for by the sense of dragging, which the increased weight of the testicle would cause. As the disease

progresses, indeed, the organ tends to lose even its normal sensibility, and forms an indolent firm tumour but little sensitive to pressure.

The testicle commences to enlarge, and gradually increases until it attains the size of a turkey's egg or more, but never increases to the dimensions witnessed in encephaloid disease of the organ, for instance. The body of the testicle is the part affected: the cord, coverings of the testicle, and epididymis extremely rarely so; although it is true that the latter may become so concealed and merged in the swelling of the testicle, in the later stages of the disease, as to prevent our distinguishing it.

The syphilitic testicle very seldom suppurates. Recently, Rollet, Victor de Méric, and Curling have however described instances of this occurrence. Assuming these cases to have been the result of pure syphilitic disease, and not that mixed form so well described by Mr. Hamilton, of Dublin, under the term "tubercular syphilitic sarcocele," their paucity proves how exceptional is their occurrence. If, therefore, we have to deal with a case of enlargement of the testicle in one, the subject of syphilitic taint, possessing the above peculiarities, we may be pretty certain that it is an instance of the disease in question.

The organ is generally heavy, firm, and of ovoid form, and, as has been said, relatively insensible, wanting even that symptom so common in syphilitic diseases elsewhere located:—viz., nocturnal pain.

In most cases, there is some effusion into the tunica vaginalis, which may require evacuation before we can perfectly examine the organ itself.

The course of the disease is remarkably slow and indolent, lasting for years, unless remedies have been applied; sometimes, as Dr. Wilks has well pointed out, the testicle may atrophy, from absorption of the effused material, and come to resemble a form of cirrhosis,—as a firm alveolated-looking fibroid tissue, from the shrinking of the organ, thickening of the tunica albuginea, and the disposition of the atrophied remains of the spermatie duets, and the fibrous processes from the fibrous investment. The sexual desires are not changed, unless in very chronic cases, or when the state last described has affected both organs.

Differences of opinion exist as to whether the disease ordinarily attacks both testicles at the same time, or consecutively, or only one. Judging from my own experience, I should say that it is more frequently limited to one.

Pathology. Great differences of opinion exist as to the exact nature of the disease, the result, probably, of the paucity of examples examined in an early stage, and the mixed character often of the specimens which have been described.

The material here present, and which causes the enlargement of the gland, is identical with that which we have already seen as the product of syphilis in other tissues. It is a form of lymph peculiar in its nature, as tending at an early stage to soften and become absorbed, or to shrink and resemble a fibrous substance, but rarely being developed into a higher tissue, or undergoing a suppurative transformation. Another peculiarity is, that it is not circumscribed as an

ordinary fibrous tumour, but is infiltrated and thoroughly mixed with the tissue in which it is deposited; hence, we may find that, not only is there a diseased product upon the exterior of the tubes, but these have lost their normal appearance, and contain a similar substance.

Sometimes this material resembles the gluey product found in the so-called gummatous tumours. At an early stage of the disease, the testicle is found to contain one or more distinct masses of induration, which may form slight projections upon the surface, of the size of the head of a pin, a pea, or even an almond, but which are never so prominent as to change the general contour of the organ. These projections are due to an effusion of plastic material. As the disease progresses, the distinct masses of induration coalesce and form a hard resistant tumour, which still preserves to a great extent the normal shape of the testicle.

The "tubercular syphilitic sarcocele" described by Mr. Hamilton is a very different affection. In this the testicle is enlarged to three or four times its natural bulk. Both organs are commonly affected, but one is more so than the other. When disorganization is great, all sexual desire may be lost.

The testicle, besides being so much larger, is of an irregular shape, presenting an uneven, hard, and knotty mass. It frequently goes on to suppuration, affording a thin pus, and leading to fistulous openings, sometimes to the protrusion of a fungus. There is no marked pain nor tenderness, but uneasiness in the loins and cord from the weight of the organs. This variety of

sarcocele occurs only in persons of a broken and cachectic constitution, who are suffering from the more advanced forms of tertiary syphilis.

Mr. Hamilton states that tubercles of a yellow colour, and varying in size from a split pea to a chestnut, or larger, are found in the substance of the organ: the softening and suppuration around these lead to a disorganization of the gland, which becomes converted into a hard, irregular, fibrocellular mass, in which cretaceous matter is occasionally found.*

Treatment. The first and pure form of syphilitic orchitis will require a specific treatment. Provided this has been commenced sufficiently early, the disease can be pretty certainly cured; but when the morbid process has been chronic, or of long standing, it may yield very slowly, or not at all, to the action of remedies. The best plan is to give mercury in small doses, over a long time. The iodide, or the bichloride are very good preparations; or the patient may use the calomel vapour bath, and take iodide of potassium or iron with sarsaparilla, or tincture of bark.

A convenient mode of applying the mercury is to rub it into the scrotum, and direct the patient to wear a suspensory bandage, for the purpose of cleanliness.

* The term "tubercle" is made to embrace a variety of products possessing some characters in common. We are inclined to agree with Virchow in believing that a process of "tuberculation," as he terms it, is common to many morbid products, particularly the caco-plastic lymph of a scrofulous subject. It is often extremely difficult to draw the line between the degenerated products of an inflammatory effusion and true tubercle, particularly in the testicle.

Mr. Erichsen recommends strapping the affected gland with *emplastrum ammoniaci cum hydrargyro*, mixed with the *empl. belladonnæ*.

The treatment of that variety in which there is a tubercular tendency, must be conducted upon the principles required in strumous disease of the testicle, modified by the knowledge that it is a mixed disease, and may be benefited by a careful and discriminating use of specific remedies.

The absorbent glands are very frequently enlarged in tertiary syphilis. The condition of those situated in the upper and back part of the neck has, by many eminent writers, been regarded as diagnostic of a patient's system being affected with syphilis, or otherwise. But the absorbent glands are generally only affected in secondary and tertiary syphilis, in consequence of disease in the parts from whence they have their origin. It very frequently indeed happens, both in primary and secondary syphilis, that there is a sore upon some part of the head, and then the posterior cervical glands will be enlarged; but if the sore be confined to one side only (as, for instance, a chronic ulceration on one cheek), then the cervical glands will be enlarged only on that side. *

TREATMENT OF TERTIARY SYPHILIS.

The same general remedies are used for this so-called tertiary, as for the secondary forms of syphilis. Patients labouring under tertiary syphilis, however, often have undergone more than one course of mercury, imperfectly administered perhaps, or the effects of which may

have been ill-regulated. In the great majority of cases, any further prolonged exhibition of mercury internally is out of the question. Iodide of potassium, sarsaparilla, bark, the mineral acids, and opium, are therefore the remedies most generally used. The iodide of potassium is an excellent remedy in many forms of tertiary syphilitic ulceration, in cases of enlarged glands, and in syphilitic affections of the bones. From three to five grains of this medicine three times a day will seldom fail to relieve the pain of a syphilitic node within a few days.

The benefits of sarsaparilla are most marked in those cases in which the patient's constitution has been debilitated by the abuse of mercury, or where the bones have become affected with caries. In order, however, to obtain the remedial effects of this medicine, it should be given in sufficient quantity; a pint of the decoction should be given daily, or half an ounce of the fluid extract three times a day, and continued for some weeks. The iodide of potassium may very conveniently be combined with any of the preparations of sarsaparilla. Bark, iron, and the mineral acids are all of use in restoring the strength of the patient, impaired either by the disease, or by the injudicious use of remedies; and opium, by relieving pain and giving rest, will often prove most useful. But none of the medicines now mentioned will cure syphilis. Every form of this disease may ultimately be cured by the unassisted powers of nature; and the remedies above mentioned may render much assistance, and some of them, especially the iodide of potassium, has a great influence in removing particular symptoms; but they

do not cure the disease. The only medicine which can be considered as doing this is mercury ; but in the tertiary forms of disease this medicine can scarcely be administered internally, and inunction is apt to be followed by troublesome pustules and ulcerations. Where other means fail, the slow imbibition of calomel through the skin affords an excellent means of introducing the medicine into a patient's constitution. If this remedy is really indicated, there is scarcely any condition in which it may not be used. In consequence of not interfering with the internal organs, it does not in any way increase the weakness under which the patient may be suffering, and may be given as a patient lies in bed. A large class of cases, in which a few years ago mercury was thought altogether inadmissible, are now habitually and effectually treated in this way. The action required is less than in cases of secondary syphilis, but it should be maintained for an equal length of time. Ten grains of calomel, used with the fumigating-lamp, as described in the next lecture, are often sufficient ; and if there are any open sores, still less may sometimes be used. Any of the usual tonics may of course be administered internally, at the same time that the patient is using mercurial fumigation. If the patient suffers much from perspiration, the calomel may be volatilized with a slight flame without any water. In this way any increase of debility in consequence of the sweating will be avoided. In cases where a patient's constitution has not been impaired, other forms of mercury may occasionally be used.

Some of these have been thought to be peculiarly

adapted to one kind of affection, and some to another. Thus, for iritis calomel has generally been given internally, combined with opium. For the deep ulcer of the tonsils the bichloride of mercury has very often been prescribed ; and for eruptions on the skin the proto-iodide of mercury has been most extensively employed. But, generally speaking, whatever may be done with these remedies, may also be effected by the imbibition of mercury through the skin ; and the adoption of this mode of treatment, when properly carried out, is attended with a great saving of the powers of the patient's constitution.

LECTURE XVI.

 THE CALOMEL VAPOUR BATH.

THREE different ways of giving mercury have been mentioned in a previous lecture, viz. 1. The administration of the medicine internally. 2. Its introduction into the patient's system through the skin, by means of mercurial frictions. 3. The use of mercurial vapour baths.

1. The blue pill is one of the most ordinary forms in which mercury is given. From three to five grains, combined with half a grain, or a grain of opium, may be ordered two or three times a day. The hydrargyrum cum cretâ may be given in doses of from three to five grains, either alone or with an equal quantity of Dover's powder.

Calomel, either alone or mixed with opium, or in the form of the red pill, may also be given in doses of from one to three grains two or three times a day. All these preparations of mercury, as well as those which have been previously mentioned, are very valuable remedies under certain circumstances. But where a sustained and continued action is required they are very apt to produce irritation of the digestive organs. Even when

combined with opium, the internal use of mercury can seldom be continued as long as is desirable. It will be found in some way or other to affect the patients' constitutions injuriously, and to make it extremely distasteful for them to continue the course for a proper and necessary time.

Mercury introduced into the stomach and intestines produces, as is well known, a powerful effect upon the liver. This doubtless depends upon the blood from these parts being directly conveyed through the vena porta to that organ. Sir Ranald Martin, in his admirable work on the influence of tropical climates, observes, that mercury enters into intimate union with the elements of the blood, and that it must therefore modify its plasticity, and influence all the organic functions to which it is subservient. The parts upon which this influence expends itself, when mercury is given internally, are the liver* and intestines. Even robust and healthy persons can seldom bear any prolonged irritation of these organs with impunity; and in patients of relaxed enfeebled habits, any sustained mercurial action which produces its primary and direct influence upon those parts is quite out of the question as a remedial measure.

2. Mercurial inunction is a very efficient way of using mercury; but it is dirty, laborious, and often little suited to the taste of those who require its aid. On this account, patients very frequently use the

* A case has recently fallen under my observation in which a young gentleman, after the prolonged use of mercury internally, died of jaundice, to the surprise of all his friends.

remedy with great irregularity, or even remit it altogether. It is, however, much less liable to produce griping and purging than when the drug is given internally, and the effect upon the constitution is not nearly so debilitating. When mercurial ointment is used, half a drachm or a drachm is rubbed into the inside of the thighs by the patient every night. This in winter is conveniently done before a fire. The ointment should be rubbed in until it disappears. The process will occupy about half an hour, and the patient should wear some flannel drawers, and not wash the remains of the ointment off. The application of the ointment must be repeated every night until the gums become soft and slightly spongy ; this is the best indication of the proper action of mercury upon the patient's system, and the action should be maintained by regulating the quantity of ointment used, for six, seven, or eight weeks, according to circumstances. Many surgeons are in the habit of leaving off the mercury soon after the patient's gums are affected. According to the author's experience, this practice not only fails to cure the disease, but actually does harm. The patient's constitution is weakened to a certain extent, and the disease is not cured ; but what is of more importance still is, that the secondary symptoms, when they do appear, are often of a worse and more intractable character than if no mercury had been given.

There are two principal objects in view in treating a case of syphilis ; the first is to remove the symptom, and the second to cure the disease. Now a short

course of mercury will often effect the former of these two objects, as will also, in almost all secondary cases, the iodide of potassium ; but neither the short course of mercury, nor the iodide of potassium, will in general cure syphilis. The symptoms will, it is true, be removed, but they will return ; and practically it is found extremely difficult to induce patients, particularly in the upper classes of society, to continue a course of mercurial inunction sufficiently long to prevent the occurrence, or the return of secondary syphilis.

By introducing mercury into a patient's constitution, by inunction, its deleterious action upon internal organs is avoided. The amount absorbed into the blood produces its influence equally throughout the system, and is not conveyed direct to the liver, as when the medicine is administered internally.

But great as the advantages of the inunction of mercury are as compared with its internal administration, it, nevertheless, is attended with certain inconveniences which prevent its very general use. The inunction of mercurial ointment, so as to ensure the proper effect of the remedy, requires considerable labour and perseverance on the part of the patients ; and it is with difficulty that they can be induced to continue its use for any length of time ; and sometimes it produces a troublesome pustular eruption on the skin.

3. Fumigation of the surface of the body by means of certain mercurial preparations possesses the advantages of inunction, without some of the objections to which this is liable. But, like other modes of using

mercure, it was tried in a variety of ways before a safe and efficient mode of administration was adopted.

In the years 1786-7, Mr. Pearson had a fumigating machine constructed according to the directions given by M. Lalouette. This apparatus, although it was thought to be new at the time, differed in no material respect from that described by Nicholas de Blegny in the year 1683.

Mr. Pearson made a considerable number of experiments with this fumigating machine, and found that the gums became turgid and tender very quickly, and that the local appearances were sooner removed than by the other modes of introducing mercury into the system. But, to counterbalance these advantages, it was found that the mode of treatment adopted induced debility, and that ptyalism was often excited rapidly, and at an early period. Mr. Pearson found that he was, consequently, obliged often to discontinue his course of treatment.

Sir Benjamin Brodie's experience coincided with that of Mr. Pearson. He found that it was difficult to regulate the mercurial action ; and he observes that by using mercurial fumigation "you may affect the system too much or too little ; and you may be taken un-awares by the patient's gums becoming all at once excessively sore." (*Lectures on Pathology and Surgery*, p. 246).

From observations and comparative experiments which I made at the Lock Hospital during the years 1855-6, I feel satisfied that the irregular results noticed by Mr. Pearson and Sir Benjamin Brodie, depended

upon the difference in the chemical composition of the powder used for the purposes of fumigation, both before and after it was raised into a state of vapour. The gray oxide of mercury (the preparation generally used) varies much in colour as obtained at different shops. Some specimens will not volatilize at the temperature produced by an ordinary spirit-lamp under a metallic plate. Other specimens of a lighter colour volatilize quickly enough. When the darker specimens are sublimed, they are decomposed in a greater or less degree. A deutoxide of mercury is formed by the addition of an equivalent of oxygen from the air ; and if the temperature be much increased, then the oxygen is driven off altogether, and metallic mercury is sublimed. Under these circumstances, with a mercurial preparation of uncertain composition, and undergoing different changes according to the degree of heat applied, there is no wonder that very different effects should have been produced in different cases. With some samples of the gray oxide it is necessary to use a considerable quantity of the powder in order to ensure any effect ; with other samples, a similar quantity produces much more action than is desirable. The gray colour of the powder depends upon the admixture of a certain proportion of calomel with the protoxide, and the temperature at which any particular specimen will volatilize will depend upon the relative proportions of the two. The bisulphuret of mercury, again, which has been extensively used for the purposes of fumigation, gives off, when exposed to heat, a vapour, probably the sulphurous acid gas, which has

sometimes caused very considerable irritation of the lungs ; and all forms of mercurial fumigation have, in consequence, by some, been condemned.

Now, all the inconveniences above-mentioned may be avoided with certainty, by using a mercurial preparation which is always of the same chemical composition, which does not irritate the lungs, and which is not liable to be altered by an increase of temperature. Such a preparation is calomel. We have here a definite chemical compound. It is altered in composition, neither by heat, nor by moisture, and may be relied upon when used for the purposes of general fumigation, for producing its action, as certainly as any medicine administered internally. A very small quantity (as compared with the other mercurial preparations) will ensure the required effect, and this may be regulated and controlled with great precision.

General calomel fumigation may be used in cases where the administration of mercury by other methods is inadmissible. On account of the small amount of calomel required, it may be used, sometimes with the greatest benefit, even where other modes of fumigation, requiring larger quantities of mercury, cannot be borne. Two remarkable cases, illustrating this fact, are at present* under my observation.

In one case, a patient who had had his throat affected between eleven and twelve years, and who was unable to swallow even fluids without the greatest inconvenience and distress, was reduced to such a degree

* Dec. 1861.

that it was feared he would sink. The back of this patient's throat was one mass of phagedænic ulceration. Under the direction of Mr. Davis, of Spring Gardens, and myself, the calomel fumigating baths were administered every night; and at the expiration of three weeks, the ulceration had become quite clean, the patient could swallow without any inconvenience, and had gained considerably in weight.

In the other case, a patient had had his penis "gradually wasted away" by phagedænic ulceration, until the ulcer was on a level with the serotum. The disease had gradually progressed. Having ordered him a calomel vapour bath every night, I had an opportunity of seeing him exactly three weeks and two days after he had commenced their use. The ulceration was at that period all but healed. Previously to trying the calomel baths, this patient had been subjected to all the ordinary modes of treatment.

Calomel appears to have been formerly used for the purposes of general fumigation, as well as other preparations of mercury. But it was used in the same quantities as those other preparations, and was, therefore, open to some of the same objections as they.

M. Rapou published in Paris, in 1824, two volumes on Fumigations as employed in various diseases. The mercurial preparations which he recommended were *einnabar*, *Lalouette's mercurial powder* (which consisted of a mixture of mercury and clay), calomel, and corrosive sublimate.

The quantity used for the first three, he recommended to be from "a quarter to half an ounce each

time." The amount of the corrosive sublimate, he says, should not exceed five or six grains.

Even with these very large quantities, M. Rapou had only seen salivation produced in three instances, and these were of a very short continuance, and yielded to the use of ordinary baths. M. Rapou recommended the mercurial fumigations to be used with steam, which, he said, calmed the system, softened the skin, and did not prevent the absorption of the mercury.

Now, all the methods of applying mercurial fumigation above mentioned required the use of a complicated apparatus, which private individuals cannot command. In order to adapt this method to general use, it was necessary so to modify the apparatus that any one could use it in his own room; and this has now been most effectually accomplished.

Mr. Langston Parker recommends an apparatus, for the use of which the patient is placed on a chair, and covered with an oil-cloth lined with flannel, which is supported by a proper framework. Under the chair are placed a copper bath containing from half a pint to a pint of water, and a tinned iron plate, on which is put from one to three drachms of the bisulphuret of mercury, or the same quantity of the grey oxide, or the bin-oxide, or other mercurial preparation; under each of these is a spirit lamp.

The mode of treatment by this apparatus appears to have been most successful in Mr. Parker's hands. But the apparatus is not one which a patient can procure for himself, so as to give himself his own bath.

Using the same large quantities of the mercurial

preparations as Mr. Pearson and Sir B. Brodie, it is somewhat remarkable that neither M. Rapou nor Mr. Langston Parker have seen any of the injurious effects of this remedy which were recorded by those gentlemen. This may be, perhaps, in a great measure, accounted for by the fact that both M. Rapou and Mr. Parker recommend the bath to be used so as to produce a very considerable amount of perspiration. Any action thus induced is determined to the skin, and the intensity of the specific action is thus prevented from developing itself in any internal part. Another, and perhaps a still more important point is, that, after the bath as employed by Mr. Parker, the body is "rubbed dry." In this process, a very large proportion of the mercury which has been deposited upon the surface is necessarily removed. In the calomel vapour-bath, as I have now used it for several years at the Lock Hospital and elsewhere, fifteen or twenty grains of calomel only are used ; but that which is deposited upon the skin is allowed there to remain, and, by a slow process of imbibition, a part of it is probably absorbed into the blood. A continued slight action is thus maintained, and the danger of any violent or sudden effect completely obviated. It may be observed also that, if any very great amount of perspiration be induced, it will tend to remove the mercurial powder from the surface of the skin, and thus diminish the effects which would otherwise be produced.

Several different kinds of apparatus have been made for the purpose of administering calomel fumigation,

since its introduction at the Lock Hospital. Mr. Matthews of Portugal Street constructed an apparatus which answered every purpose. It consisted of two spirit lamps, one of which volatilized the calomel, while the other boiled a small quantity of water. The patient sat over these, enveloped in a cloak or large blanket fastened round his neck, and became quickly surrounded by an atmosphere of moist mercurial vapour.

The most convenient calomel vapour-bath, and that which is now generally used, is one which was made at my request by Mr. Blaise, of 67 St. James Street. This was completed, after many experiments and modifications undertaken and directed by Mr. Pollock, surgeon to St. George's Hospital. In this apparatus there is only one lamp, which sublimes the calomel and boils the water at the same time. In the centre of the top, immediately over the wick of the lamp, is a small, separate, circular tin plate, upon which the calomel is placed. Around this is a circular depression, which may be one-third filled with boiling water. The apparatus is then placed on the ground, and the lamp is lighted. The patient sits over it, with an American cloth cloak, or a Mackintosh, or a moleskin cloak (also sold for the purpose by Mr. Matthews and by Mr. Blaise), fastened round his neck. He thus becomes surrounded by calomel vapour, which he is generally directed to inhale for two or three separate minutes during each bath. In doing this the patient should not put his head under



the cloak, but simply allow some of the vapour to escape from its upper part, and breathe it mixed with a large proportion of common air. At the expiration of a quarter of an hour or twenty minutes, the calomel is volatilized, and the water has boiled away. A portion of the calomel is deposited, together with the condensed vapour of the steam, on the patient's body, and is there to be left to undergo a partial absorption. The quantity of spirits of wine used upon each occasion is so regulated, that the lamp goes out of its own accord about the same time as the calomel and the water disappear. The patient then gradually unfastens the cloak, and in about a minute he is sufficiently cool to put his night-dress on without much interfering with the very fine layer of calomel which covers his body. He must be particularly told not to wipe his skin, as by so doing he would necessarily interfere with the action of the medicine.

Of all the modes of administering mercury, fumigation is that which is attended with the least demand upon the patient's constitution. The amount administered in this way can be regulated with the greatest facility; and the action may be maintained without inconvenience for almost any length of time. On this account, as well as for other reasons, fumigation is, in my opinion, less liable to be followed by the recurrence of secondary symptoms, than any other mode of treatment whatever; and of all the kinds of mercurial fumigation, that by calomel is the safest, and the most convenient, if not the most efficacious. The imbibition of the medicine through the skin prevents

its injurious action upon internal parts ; while the small quantity used, although quite sufficient to produce any amount of action that may be required, insures the patient against any sudden or violent effects.

In this mode of using mercury, the whole of the skin may act as an absorbing surface ; and, when requisite, the effect may be still further increased by absorption from the mucous membrane of the nose, mouth, and bronchial tubes.

In secondary syphilitic disease, the surface of the body and the mucous membranes are peculiarly liable to be affected ; and the process of fumigation has here this great advantage, that the remedy is applied directly to the diseased parts, and acts immediately upon them. When administered internally, it has, on the contrary, first to be absorbed into the blood, and carried the round of the circulation, perhaps more than once, before it comes into contact with the affected structures. Many old and intractable syphilitic ulcerations yield with surprising rapidity to local calomel fumigation ; and there is no reason why the same principle should not be taken advantage of in treating the more general forms of the disease.

Calomel alone, without the vapour of water, may be used, especially where the local action of the medicine alone is required. But, from a series of comparative trials which were made at the Lock Hospital in the early part of the year 1856, it became evident that, for the purposes of fumigation, it was advisable that a certain amount of the vapour of water should be present.

In the *British Medical Journal* for July 24th and August 14th, 1858, are given tables containing the particulars of two hundred and seventy-six cases treated in 1856 by calomel fumigation, and the time during which the patients were respectively under treatment. These tables might easily be continued up to the present time ; but to do so would only be to repeat, without any essential variation, the facts which have already been published.

The conclusions, however, which were arrived at in the year 1856 may now be emphatically repeated, after six years of additional experience. The syphilitic poison, in a very great majority of cases, produces its principal effect upon the skin. Through this organ nature attempts to eliminate the poison ; and a free secretion from the skin assists the action which nature has already commenced. It appears, from an extensive trial, that not only is the poison eliminated from the system more effectually where there is a free cutaneous action, but that under this condition the effects of mercury upon the patients' constitutions are of a much milder character than under other circumstances. The calomel vapour-bath combines the various advantages now alluded to, and its great practical advantage is attributable : 1. To the small quantity of mercury which is required, when used in this way, in order to produce the requisite effect. 2. To the fact that the imbibition of the medicine through the skin leaves the digestive organs unirritated and the digestion unimpaired. 3. To the circumstance that there is something in the free secretion from the skin, which the combi-

nation of steam and calomel produces, that moderates and controls the mercurial action. So that, out of all the cases which have been treated by calomel fumigation in the Lock Hospital, only one case of troublesome salivation has occurred, and in that case the patient had been taking pills internally before his admission into the hospital.

The action of the calomel bath should generally be continued until all syphilitic symptoms have disappeared, and for a week or two afterwards. During the first few weeks the patient should not be subject to the influence of much fresh air, and when practicable should remain in the house. The bath should be given every night, and its effects may be regulated either by the quantity of calomel used upon each occasion, or by the amount of vapour which is inhaled. Within the first few days a slight tenderness, redness, and swelling of the gums will indicate the mercurial action. This condition should, if possible, be sustained during the whole of the course; but it is not necessary to produce at any time a greater degree of mercurial action.

The length of time during which this action is to be maintained must vary considerably with individual cases. From the statistics collected in 1856, it appeared that the average length of time that the male patients were under treatment at the Lock Hospital was, for primary affections, twenty-three days; for secondary affections, thirty-one days; and for tertiary affections, sixty-one days. In the female wards, during the same year, the average length of time during which the calomel bath was continued was, for primary cases,

thirty days ; for secondary cases, forty-five days ; for tertiary cases, sixty-two days.

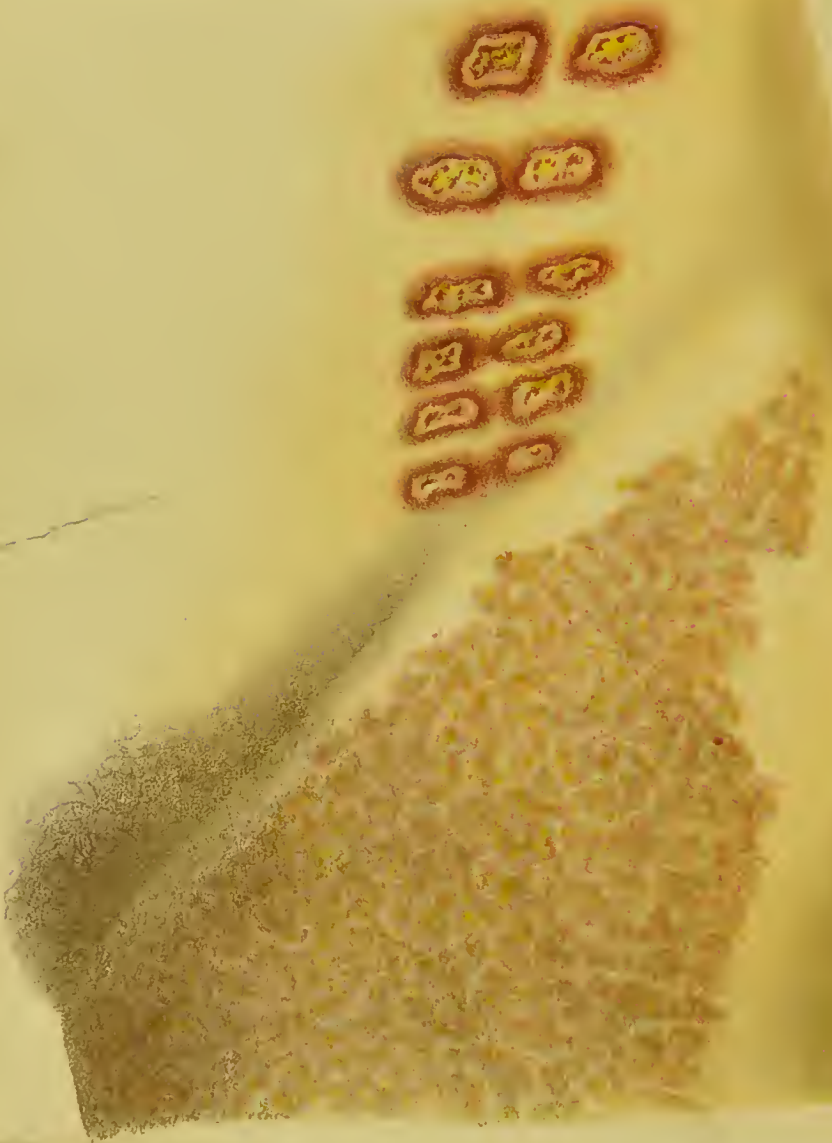
The shorter period of time, during which the male patients remained under treatment, is accounted for, from many of them having left the hospital as soon as their symptoms had disappeared, and without having continued their treatment sufficiently long to afford much security against a recurrence of their disease. Many of the women, on the other hand, remained as long as was deemed requisite, in order that they might, upon being discharged, be admitted to the Lock Asylum. In private practice, a mercurial course should seldom, in the first instance, in my opinion, be less than two months, and it may often, in a modified form, be continued for a much longer period.

The mode of administering mereury which I have now recommended has, I have reason to believe, been adopted in medical as well as in surgical cases. Since its introduction, Mr. Blaise informs me that he alone has sold 787 lamps, for the calomel vapour bath, since January 1857.

Local Calomel Fumigation. Different kinds of apparatus have been used for local fumigation. The calomel fumigating lamp, previously described, answers the purpose extremely well. The vapour of calomel, being of very light specific gravity, ascends, and any part placed over it becomes coated with a very fine layer of calomel. This forms an excellent dressing for intractable ulcers, whether of a primary or secondary nature. Tubes of various shapes have also

been employed so as to direct the vapour of the calomel to particular parts. Thus, a long tube has been adapted to the calomel-lamp with a mouth-piece, for the purpose of inhalation in affections of the throat. A roll of paper has been often used with the same object. But it is evident that, as the calomel mixes with the air, the simple act of respiration does all that is required ; and as far as the throat is concerned, any tube is much more likely to detain the calomel, than to direct its course. It is often, however, convenient to direct the vapour of calomel to parts which cannot well be brought over an ordinary lamp, and then an additional apparatus is necessary. One which has now for a long time been in use in the Lock Hospital consists of a curved earthenware tube open at one end, with a spirit-lamp applied at the other. Some calomel is placed within the tube, and when volatilized may thus conveniently be directed to any part.

THE END.



DESCRIPTION OF PLATE I.

FIG. 1.

- 1.—Inoculations of secretion from a suppurating sore, as they appeared on the forty-first day. Phlegmonoid variety.

FIG. 2.

- 2.—Third set of inoculations, represented on the thirty-fifth day.
- 3.—Fourth set, on thirty-second day.
- 4.—Fifth set, on twenty-eighth day.
- 5.—Sixth set, on twenty-fourth day.
- 6.—Seventh set, on twenty-second day.
- 7.—Eighth set on eighteenth day.
8. 8.—Non-syphilitic eruption on the thigh, as it appeared on the eighth day, being the forty-first from the first inoculations.

A

B



Fig. 1

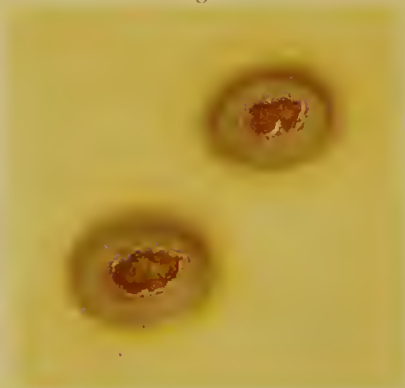


Fig. 3

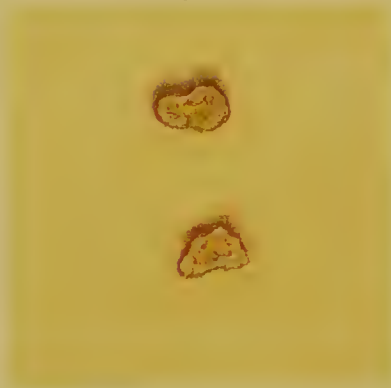


Fig. 4



Fig. 5



DESCRIPTION OF PLATE II.

Fig. 1.—Indurated sores in process of healing.

„ 2.—Original sores, covered with epithelium.

„ 3.—Inoculations from sores artificially irritated, showing the appearance on the tenth day.

„ 4.—The appearance of the inoculations on the twenty-sixth day.

„ 5, A.—Original sores healed.

B.—Remains of inoculations on the thirty-fifth day.

C.—Remains of inoculations from inoculations.



1a

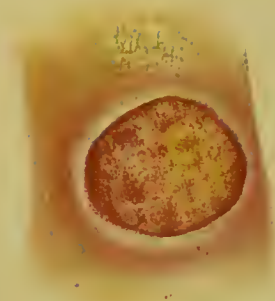


DESCRIPTION OF PLATE III.

Fig. I.—Secondary non-ulcerating syphilitic inoculation.

„ 1a.—Enlarged, but not inflamed, inguinal glands, accompanying the above-mentioned inoculation.

Fig. II.—Primary non-ulcerating syphilitic inoculation.



2

3



5



7

10

11

DESCRIPTION OF PLATE IV.

Fig. 1.—Irritated primary indurated sore.

„ 2.—Inoculation from 1, on the patient's thigh, eighth day.

„ 3.—The same inoculation, ninth day.

„ 4.—Cicatrized primary sores on glans and prepuce, which caused phimosis, and were accompanied by considerable induration. This could not be distinguished from the induration of an infecting sore. There was also enlargement of one gland in the left groin.

„ 5.—Inoculation from 4, on the patient's left thigh.

„ 6.—Inoculations of secretion from secondary inflamed mucous tubercles on twelfth day.

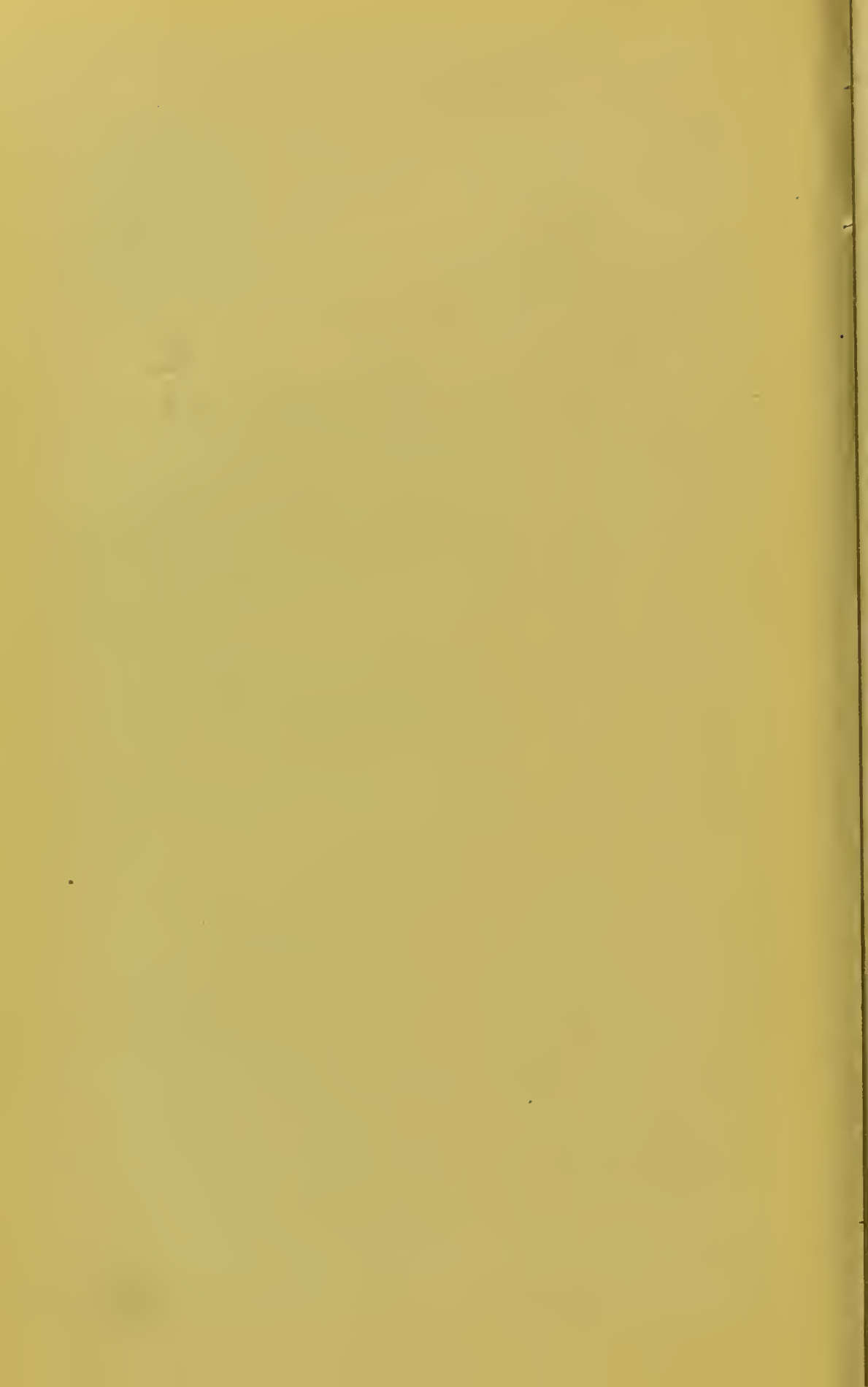
„ 7.—Inoculations from inoculations (6), eighth day. These inoculations formed pustules, which had now dried up.

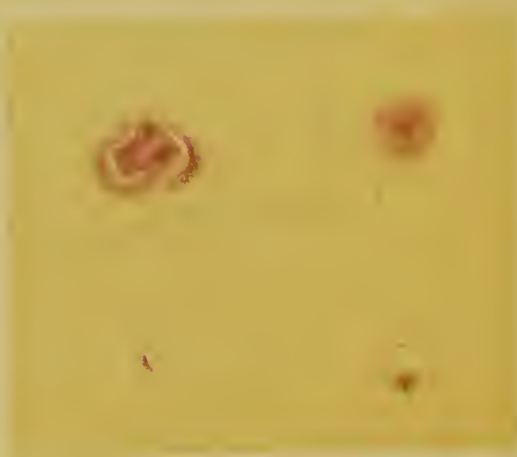
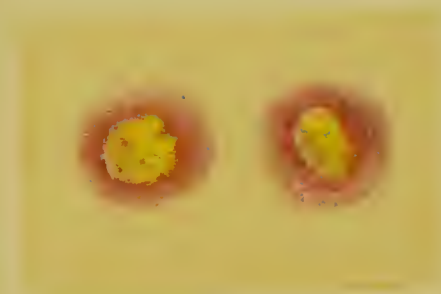
„ 8.—Inoculations from inoculations (7), fifth day.

„ 9.—Inoculations from inflamed secondary mucous tubercles; appearances on the twenty-fourth day.—The same as 6.

„ 10.—Inoculations second in order from 9; appearances on the twentieth day.—The same as 7.

„ 11.—Inoculations, third in order from 10; appearance on the seventeenth day.—The same as 8.





3

4

DESCRIPTION OF PLATE V.

Fig. 1.—Artificial inoculation on the sixty-second day, from a serpiginous sore of six years duration.

„ 2.—Inoculations from inoculation (1) on the eighth day.

„ 3.—Inoculation, third in order, from patient's own serpiginous sore ; appearance on twenty-first day.

„ 4.—Inoculations from indurated and infecting, but inflamed and suppurating sore.—Third day.

„ 5.—Inoculations from indurated, but suppurating sore ; appearance on twelfth day.

„ 6.—Inoculations, second in order from 5.

„ 7.—Inoculation, third in order from 6, third day.

„ 8.—Inoculation of secretion of primary indurated sore. No pus globules in the secretion.—Twelfth day.

„ 9.—Inoculation, second in order from 9, tenth day.



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